

Technology Review

Edited at the Massachusetts Institute of Technology

April, 1963

In a Frog's Eye, Page 21

Water from Desalination, Page 17



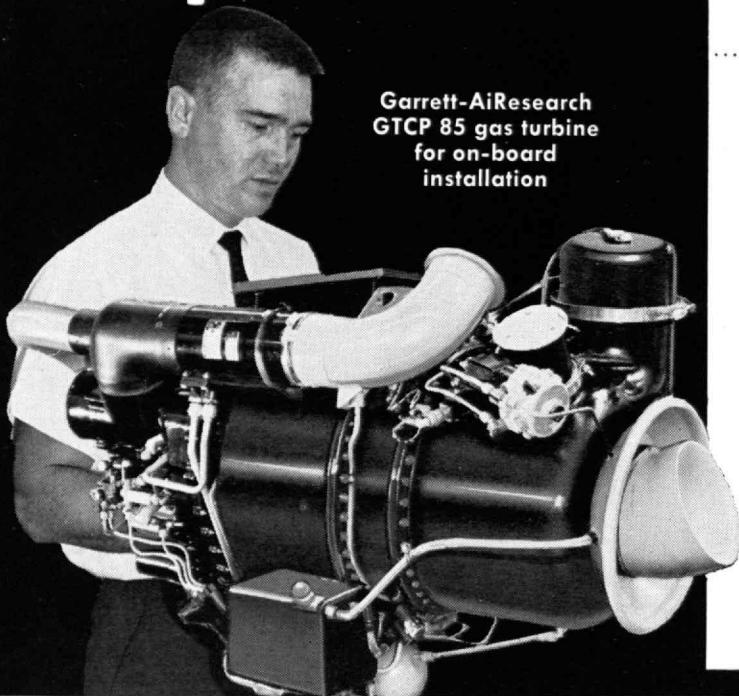
technology review

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for on-board
installation



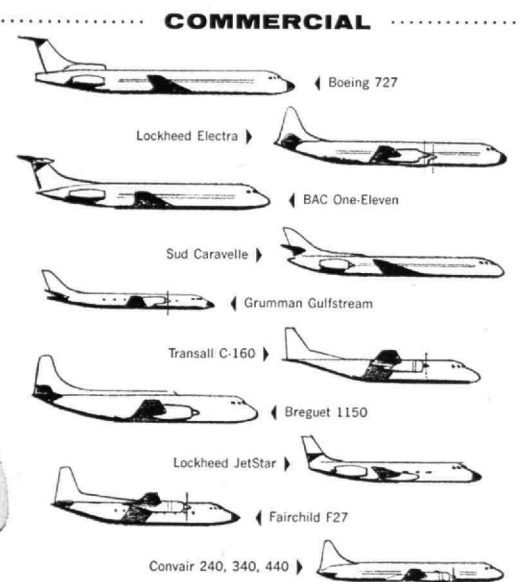
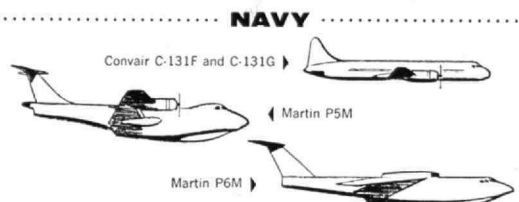
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1963 6 x 9 178pp. 30 tables \$10.00

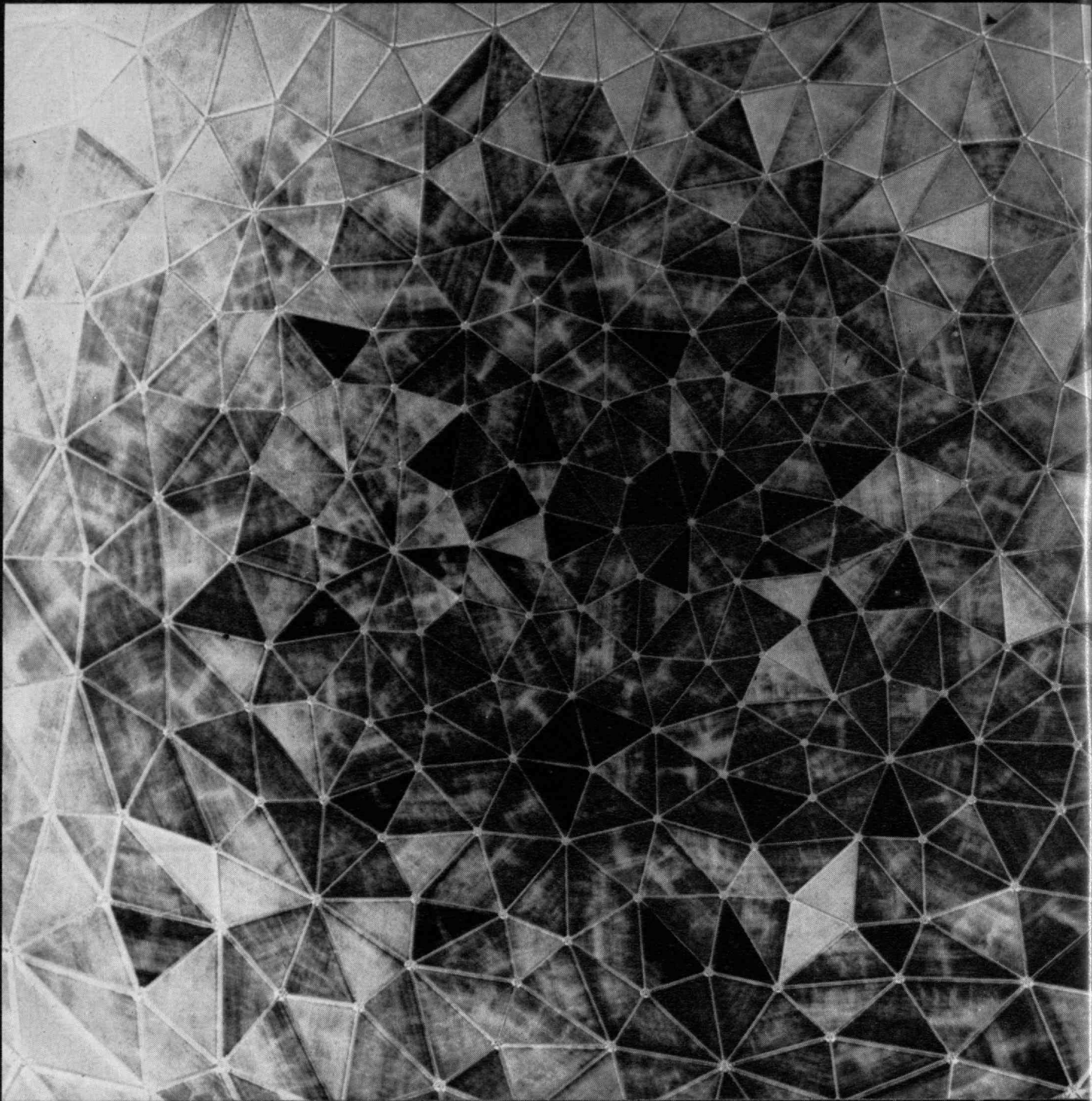
COMMUNITY AND CONTENTION

Britain and America in the
20th Century

by Bruce M. Russett

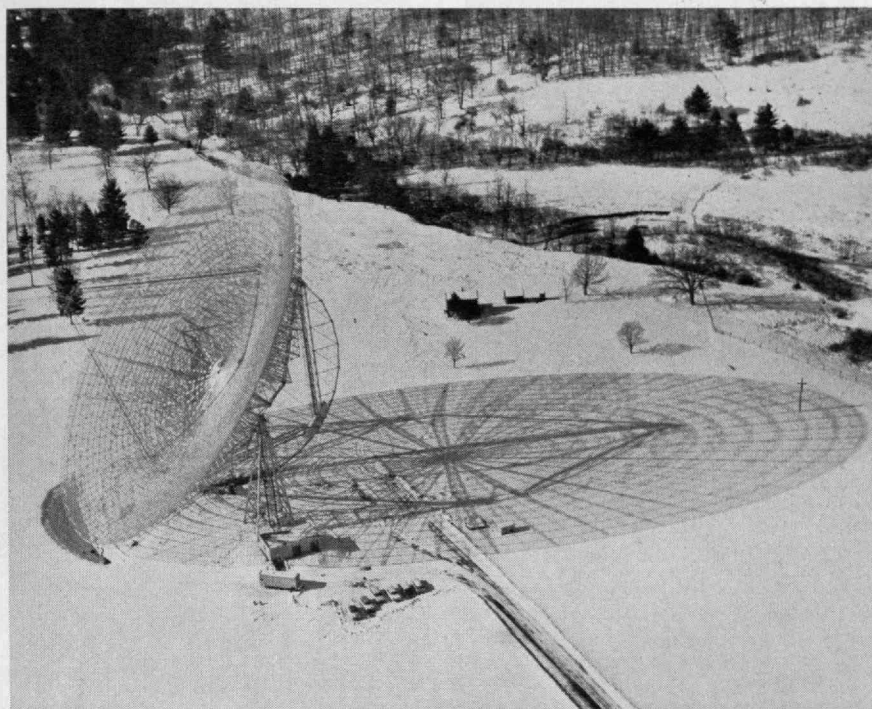
The Anglo-American special relationship is not just another alliance, but the crux of free-world security. Americans and Britons who assume this bond is unbreakable ignore the significance of the long term trends and recent disagreements that threaten to disrupt the harmony of this crucial relationship. Applying a newly evolved method for measuring temperature changes in international politics, Dr. Russett analyzes these trends and dissects the underlying problems of the Anglo-American alliance.

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Re-entry Physics
Space Communications
A description of the Laboratory's work will be sent upon request



THIS ANTENNA at Green Bank, W. Va., is as wide as a football field is long, and when pointed straight up its electronic feed is as high as a 23-story building. Engineering responsibility for its construction was borne by E. R. Faelton, '38, of Buffalo. It is for study of the dynamics of the Milky Way, mechanisms at work on Jupiter, and other astronomical problems. Progress on another great antenna is reported in pictures on page 30.

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Cambridge 39, Mass.

The Review's publisher and editor is *Volta Torrey*; business manager, *R. T. Jope*, '28; assistant to the editor, *Ruth King*; and class news editor, *Roberta A. Clark*. Editorial consultants are *J. J. Rowlands*, *Francis E. Wylie*, and *John I. Mattill*. Members of its staff are *Madeline R. McCormick*, *Patricia Fletcher*, and *Maxine Kenny*.

Officers of the Alumni Association of M.I.T. are: *William L. Taggart, Jr.*, '27, President; *Donald P. Severance*, '38, Executive Vice-president; *Carroll L. Wilson*, '32, and *F. Leroy Foster*, '25, Vice-presidents; and *Fredrick G. Lehmann*, '51, Secretary.

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Individuals Noteworthy

Meteorological Honors

THE Carl-Gustaf Rossby Award for Extraordinary Scientific Achievement was given posthumously to *Harry Wexler*, '39, and the Meisinger Award for 1963 went to Professor *Edward N. Lorenz*, '43, at the American Meteorological Society's January meeting in New York. *Thomas F. Malone*, '46, presented the awards; *Jerome Namias*, '41, represented the Wexler family; and *John H. Hollomon*, '40, Assistant Secretary of Commerce for Science and Technology, spoke on weather and new demands for international co-operation, at the dinner at which these and other awards were announced.

For Medical Sciences

AS DIRECTOR of the newest and ninth of the National Institutes of Health, the U.S. Public Health Service has chosen Dr. *Clinton C. Powell*, '40. This institute will be concerned with general medical sciences, and replaces the division headed by Dr. Powell since last August which has assisted medical schools, universities, and other medically oriented institutions. Dr. Powell received his M.D. from Boston University, and served as a medical officer in the U.S. Navy before joining the Public Health Service.

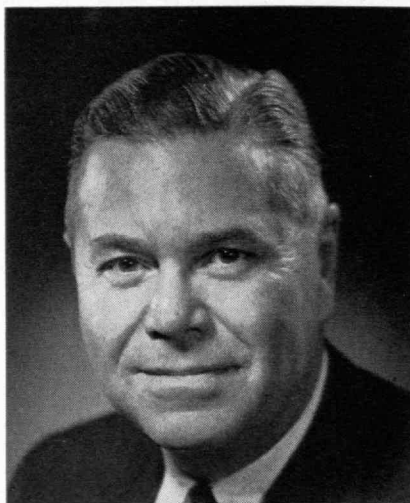
In Political Science

EUGENE B. SKOLNIKOFF, '49, has become a research associate in political science at M.I.T., under a Rockefeller Foundation Scholarship, after serving on the staffs of three Presidential science advisers—*James R. Killian, Jr.*, '26, *George Kistiakowsky*, and *Jerome B. Wiesner*.

Mr. Skolnikoff, was a Rhodes Scholar at Oxford from 1950 to 1952, a member of the M.I.T. Industrial Liaison Office from 1952 to 1955, and with the Institute for Defense Analyses in Washington before joining the White House staff.



Elisha Gray, '28



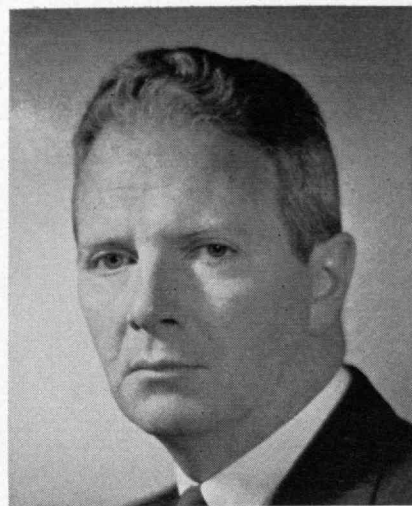
William L. Taggart, Jr., '27

Proposed for Corporation

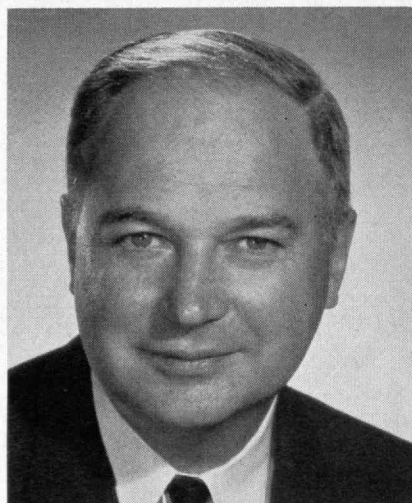
THE NAMES of the gentlemen pictured above appear on the M.I.T. Alumni Association's ballots this year as candidates for nomination as Alumni Term Members of the M.I.T. Corporation.

Mr. Gray is chairman of the board of the Whirlpool Corporation in Benton Harbor, Mich., a director of General Foods Corporation and the Sears Bank and Trust Company of Chicago, and a member of the board of governors of the American Red Cross and the M.I.T. Visiting Committee on Sponsored Research.

Mr. Morrow is a vice-president of Chrysler Corporation, for which he went to work on an assembly line in 1935. He is responsible for the Defense-Space Group, which includes missile operations and tank production; and the Diversified Products Group, which includes heating, cool-



Thomas F. Morrow, '35



Ivan A. Getting, '33

ing and refrigeration devices; marine and industrial engines; powdered metal, adhesive, and chemical products.

Mr. Taggart, who is this year's president of the Alumni Association, is executive vice-president of the Dewey and Almy Chemical Division of W. R. Grace & Company, Cambridge, and a director of the Cambridge Trust Company. He has long interested himself in the Institute and has served it in many capacities.

Messrs. Gray, Morrow, and Taggart are candidates for nomination for five-year terms on the Corporation, and Mr. Getting for a one-year term to fill a vacancy. Mr. Getting is president of Aerospace Corporation in El Segundo, Calif. He was formerly a vice-president of the Raytheon Company and was on M.I.T.'s Faculty from 1945 to 1951.

(Continued on page 6)



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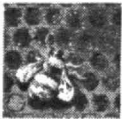


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Individuals Noteworthy

(Continued from page 4)

Honors to Alumni

RECIPIENTS of recent awards and similar distinctions have included:

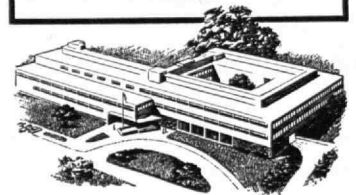
Ivan L. Tyler, '23, the Henry L. Kennedy Award; *Alfred T. Waide-lich*, '30, and *Arthur R. Anderson*, '35, jointly, the Construction Practice Award by the American Concrete Institute;

Edward H. Holmes, '28, the Exceptional Service Gold Medal Award by the Department of Commerce . . . *Richard T. Kropf*, '31, the Harold DeWitt Smith Medal by the American Society for Testing and Materials . . . *Ju C. Chu*, '46, the Medal of Honor by the University of Liege, Belgium . . . Major *Kenneth A. Sawyer*, '50, a Certificate of Achievement by the U.S. Army;

Lieutenant Colonel *James R. Smith*, '54, the Legion of Merit by the Space Systems Division, U.S. Air Force . . . First Lieutenant *Neil L. Astle*, '59, the First Prize in a Department of Defense Office of Civil Defense architectural design competition by the American Institute of Architects . . . *Norman E. Benson*, '59, the Managerial Award by the Small Aircraft Engine Department, General Electric Company.

(Concluded on page 44)

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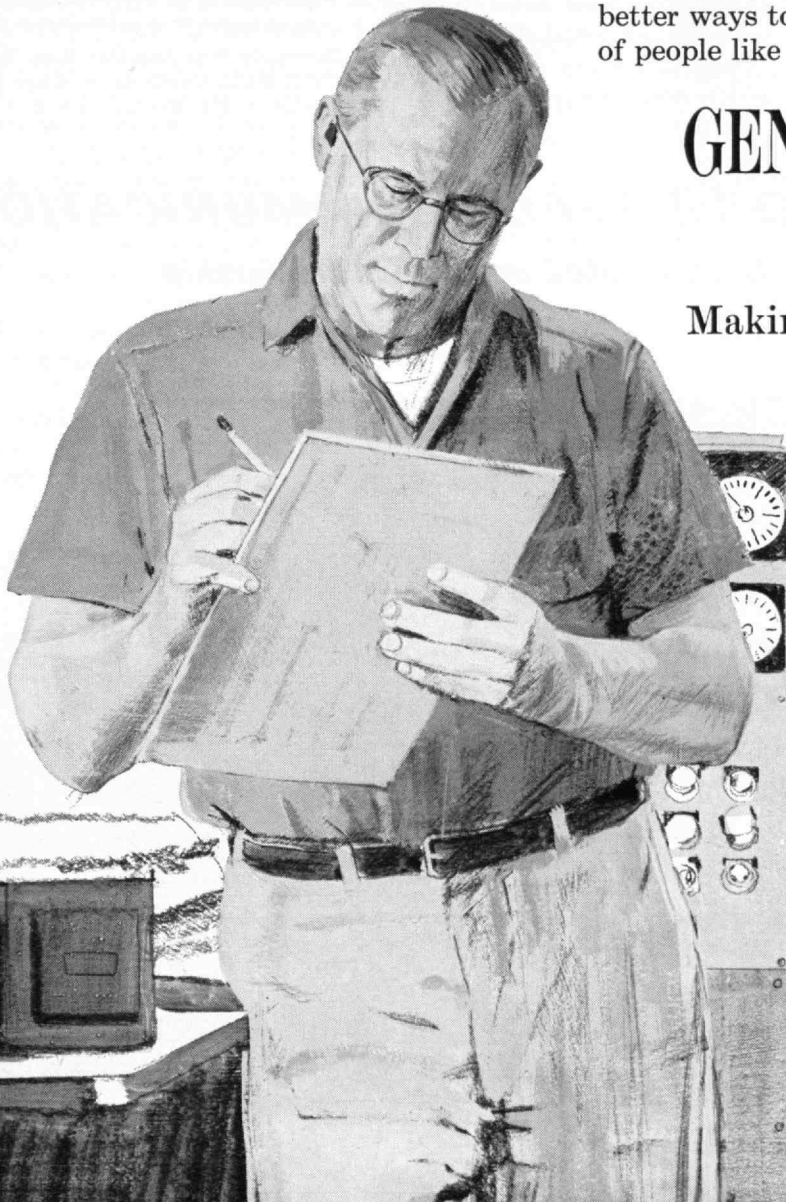
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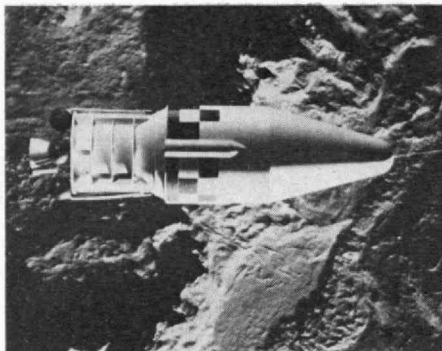
Making Better Things For You





Here, at Lockheed Missiles & Space Company's Space Communications Laboratory, scientists are re-investigating the possibility of using the moon to facilitate earth communications. Possibilities for the use of the moon as a relay station for earth-to-earth communications have been largely neglected because the moon's shape and rugged surface greatly distorted a return signal. But Lockheed research into the extension of communications on difficult communication channels, using techniques applicable to dispersive time variant channels, is making significant inroads into this problem.

Another area receiving intense study at Lockheed is satellite tracking of deep space probes. Since tracking accuracy



depends greatly on stations being as far from each other as possible, while retaining line-of-sight communications, Lockheed is studying the use of two earth-orbiting satellite tracking stations, 8000 miles apart. Not only would great accuracy be gained by the separation, but it would be further enhanced by the positioning of the stations above the earth's atmosphere, thus eliminating atmospheric distortion.

Examples of other research projects being pursued by Lockheed in the communications area include: Random multiplexing, satellite readout techniques, scatter communications, radar mapping, submarine tracking, modulation of optical energy, communications over multipath channels, and learning systems.

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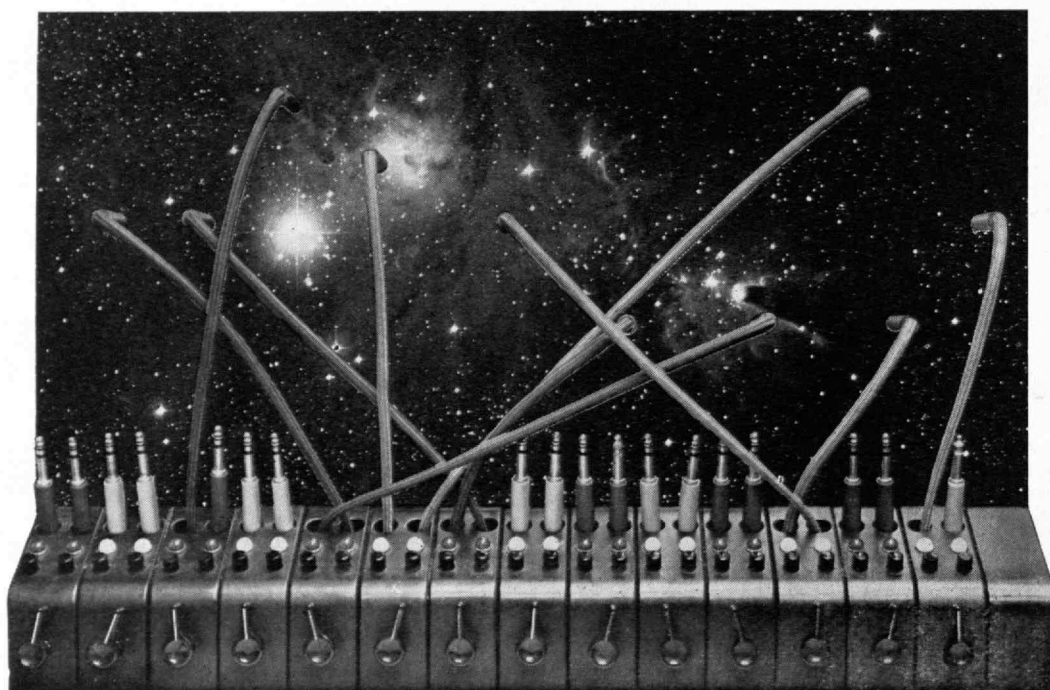
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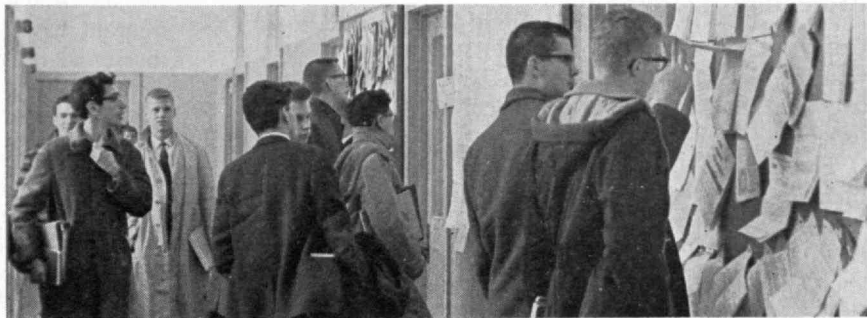
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Trend Of Affairs

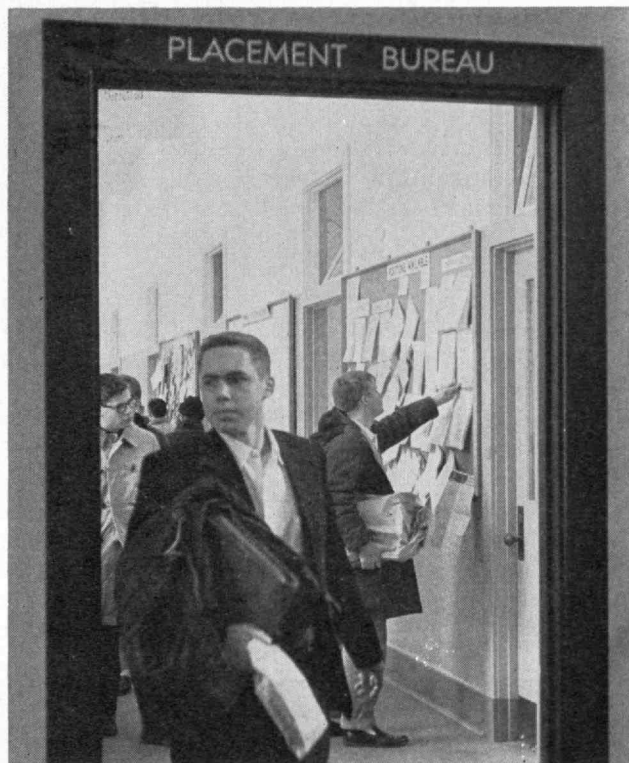
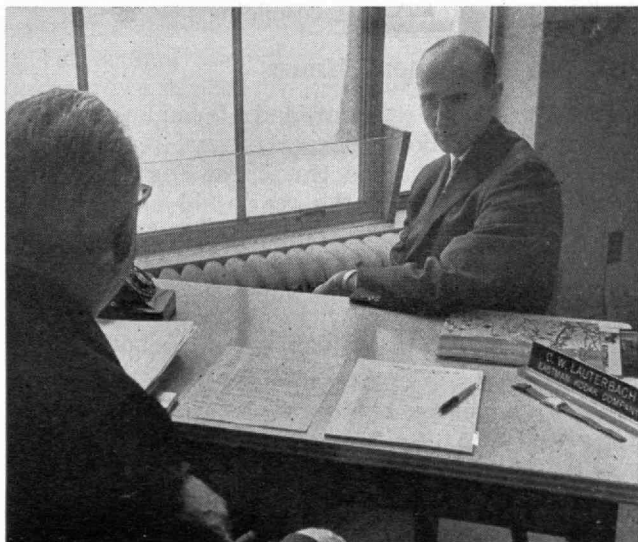


The Demand for Men From the Institute

FEBRUARY and March were busy months as usual for the M.I.T. Placement Bureau. Up to 300 students an hour consulted its bulletin boards, staff, and files, and representatives of as many as 20 companies a day used its booths to interview students. Such half-hour interviews often lead to arrangements for students to visit plants, and many hard job offers will be made and accepted this spring.

Last year, Director Tom Harrington's records show, 457 companies sent representatives to M.I.T.; 1,338 students had 6,840 interviews, and the median salary offer to seniors was about \$7,000 a year. Hundreds of Alumni seeking better jobs also file their names with the Bureau, and last year 12 jobs per man were listed with it by 1.22 companies per man.

"Within the year, at this rate," says Harrington, "it will be necessary for companies in many fields to stop some of their frantic and expensive searching for the ideal man and begin to reorganize to use all of their men to capacity. This is something which has been badly needed for the past dozen years."



More M.I.T. seniors than ever before go on to graduate schools nowadays, and providing information about graduate study and the financial aid available has become an important part of the Placement Bureau's work. Several business schools and two law schools now interview M.I.T. seniors regularly, and Mr. Harrington expects the number of graduate schools sending representatives to the Institute to rise.

The Placement Bureau is directly below the Alumni Association offices in Building 1, and its staff of personable young ladies enjoy describing the various types of men they meet. One pensive young man about to get his doctorate in physics came in day after day to get through company publications but always spurned assistance. It was a new research project for him and after three weeks he asked for interviews with representatives of 27 companies. These went on for several weeks. "I'm having the best time," he reported on one of his dashes through the Bureau. "This is fun."

Molecular Designing

COMPLETING a trilogy of M.I.T. summer sessions this year, Professor Arthur R. von Hippel will conduct a two weeks' course in "The Molecular Designing of Materials and Devices."

The earlier sessions, "Dielectric Materials and Applications" in 1952, and "Molecular Engineering" in 1956, endeavored to broaden insight into the properties of gases, liquids, and solids, through a wide alliance of physicists, chemists, and electrical engineers. Professor von Hippel was joined in this effort by experts in a variety of fields.

The coming session, August 5 to August 16, is designed to supply a critical reappraisal of the question: What do we actually understand today about the basic concepts that unify the whole field from atoms and molecules to living systems? With a thorough understanding of the periodic system in all its implications we should be able to design any kind of material or device with foresight. To explore this question, 38 outstanding specialists from all over the world will gather on the M.I.T. campus, to discuss the broad aspects of structures, properties, and devices on an interdisciplinary basis, in lectures, round-table discussions, and debates.

Those desiring further information may write the Director of Summer Session, M.I.T., Cambridge 39.

Little Factories at Work

ELECTRON MICROSCOPE photos from M.I.T. of components of biological cells were featured this winter in both *Science* (January 28) and *Scientific American* (February). They were made for studies of ribosomal clusters synthesizing hemoglobin by Jonathan R. Warner (G) and Professors Alexander Rich and Cecil E. Hall, '48.

The pictures show clusters of the ribosomal particles that Professor Hall refers to as "little factories." Some of them are linked by a thread that is believed to be the messenger RNA (ribonucleic acid) that carries the code for protein structure from the cell's genetic material to



An electron microscope picture of busy little factories.

the site of synthesis. The ribosomal particles, the investigators have suggested, read off directions from the messenger RNA by making their way along it. "Prior to these observations," *Scientific American* noted, "there was no good hypothesis to explain how messenger RNA and the ribosome collaborate physically to produce protein."

Cell Differentiation Studies

M.I.T. BIOLOGISTS have received a \$249,000 grant from the National Science Foundation to study, among other things, how a chicken gets its feathers. Put that way, the subject seems trivial. Yet the problem of how an unhatched chick embryo sprouts feathers is at the center of an all-important process of life called cell differentiation, about which little is known. The NSF grant will support studies over a five-year period by Associate Professor Eugene Bell and his associates into the cell differentiations that result in development of wings and legs and feathers in chick embryos. By these studies the M.I.T. group hopes to help scientists begin to understand the baffling and complex patterns of differentiation in general.

By differentiation, a single fertilized germ cell, with but one nucleus and one set of master chromosomes, grows and divides and re-divides millions of times over into the cells of many different kinds, shapes, and functions that make up a complete living organism. By studying cell differentiation in lower forms of life which are accessible to investigation with relative ease, biologists hope to elicit basic principles which might be applied generally. The chick embryo feather is a case in point. Fertilized chicken eggs are easy to come by, easy to handle and are relatively impervious to the dissection techniques used to study developing cells.

Between six and six-and-a-half days after fertilization, cells in the outer layer of chick embryo skin—that layer known as the epidermis—undergo changes that result in the beginning of feather growth. "We need to know what kind of message reaches these cells to tell them to go ahead and make feathers and we need to know where the message comes from and how it is transmitted," says Professor Bell. "Equally important, we need to know with precision how the epidermis responds to the message."

He and his associates will be using new cell biology laboratory facilities on the recently added eighth floor of the John Thompson Dorrance Building.

Help for Settlement House

THIRTY-FIVE M.I.T. students and 15 employees of the Polaroid Corporation renovated several rooms of the Cambridge Neighborhood House, the country's oldest settlement house, during this year's mid-term vacation. The students were members of Alpha Tau Omega and they washed walls, refinished furniture, laid new flooring, and did other such work with materials contributed by Cambridge merchants.

The red-shingled house, built in 1830 as the home of Harvard Professor Louis Agassiz' daughter, has been used as a settlement house since 1878 and for several years both Alpha Tau Omega and Polaroid employees have been helping to maintain it and supervise the activities of the young people it serves. Even the settlement house dog, Max, was a gift from an M.I.T. student.

An Educational Opportunity For Alumni of M.I.T.

AN ALUMNI SEMINAR at M.I.T. next September 7, 8, and 9 will bring together many of the Institute's most noted professors for an integrated consideration of the beginnings of things, life's origins, and the shaping of modern society. Arranged by the M.I.T. Alumni Association's Committee on Continuing Education, the program has been designed for those whose formal education has been completed but who desire more understanding of the impact and relationship of recent additions to men's knowledge of their environment, themselves, and their society.

Attendance will be limited, the guests and their wives will be housed on campus, and there will be ample opportunities for informal discussion. All participants will be expected to prepare themselves beforehand by previous reading which will be recommended to them.

The program will begin with a luncheon at 12:30 on Saturday, September 7. Introductory remarks by Professor Roy Lamson will be followed that afternoon by a lecture on the universe by Harlow Shapley, Harvard's distinguished astronomer and a member of the M.I.T. Corporation; one on the oceans, by Visiting Professor William S. von Arx, '55; and one on the earth, by Professor Patrick M. Hurley, '40.

The next morning Professors Irwin W. Sizer and John M. Buchanan will discuss the living cell and the creation of life. Institute Professor Francis O. Schmitt will speak that afternoon on "Man as an Intelligent Being," and all three will participate in a discussion and question period.

On Monday, September 9, Institute Professor Cyril S. Smith, '26, will speak on man's use of matter; Professor Emeritus Warren K. Lewis, '05, will discuss the use of energy; and the Corporation's Honorary Chairman, Vannevar Bush, '16, will talk about "What Makes Society Tick." They will be joined for further discussion by Institute Professor Emeritus Norbert Wiener and Professor Elting E. Morison.

Alumni and Faculty participants will dine together each evening. President Julius A. Stratton, '23, and Mrs. Stratton will greet them at one meeting, and their final gathering will be addressed by Dean George R. Harrison of the School of Science.

The alumni committee which recommended this seminar was headed by Professor Carroll L. Wilson, '32, and the program was drawn up by a Faculty group headed by Professor Lamson. The registration fee will be about \$50 per person.

Those interested in attending should immediately notify the Committee on Continuing Education, M.I.T. Alumni Association, Room 1-280, M.I.T., by postcard or letter.

Oil Industry Support

M.I.T.'s Vice-president and Treasurer, Joseph J. Snyder, '44, has received a \$30,000 grant to the Institute from the American Oil Foundation, of which Lewis W. Moore, '33, is president. This grant was unrestricted and made as part of the Foundation's expanded program of helping institutions of higher learning.

The 5-Foot-6-Inch Yardstick

HOLIDAY Magazine, in an article about M.I.T. last March, called attention to the Smoot marks on the Harvard bridge by which many M.I.T. students daily cross the Charles. Pedestrians have been wondering about them since 1958, when they were put on the bridge to gratify the desire of Thomas H. O'Connor, Jr., '60, to know frequently how much farther he had to go. The shortest pledge in his fraternity, Lambda Chi Alpha, was 5-foot-6-inch Oliver R. Smoot, Jr., '62, and late one cold Wednesday night four of his pledge brothers used him as a rod with which to measure the bridge for Mr. O'Connor.



Mr. Smoot performing his unusual service for pedestrians.

Mr. Smoot is now at the Georgetown University Law Center, and vividly recalls being a yardstick: "For 364.2 lengths it was mark, lift, carry, place, mark, etc.—hard work for the lifters and hard on the back of my head. Somewhere around the 300 mark, the M.D.C. cruised by and there was a steeplechase to the dark recesses of the Great Court. But now each year the pledges of Lambda Chi Alpha are allowed to preserve these amazingly useful and diverting markings."

Interfraternity Buying

M.I.T. DELEGATES to a recent National Interfraternity Conference discovered that their Purchasing Managers' Council is unusual in that it is wholly student-operated and handles a greater variety and quantity of goods than most such Councils. This Council, in which 26 of the 28 houses at M.I.T. participate, directed the co-operative purchasing of \$100,000 worth of goods last year at substantial savings.

The Council negotiates with dealers, inspects goods, and sets rates; individual fraternities then buy the amounts they wish. By guaranteeing a certain volume, the Council has been able to obtain many things more cheaply than individual houses could, and in some instances obtain better service. Since it is totally student-operated, running costs were held last year to \$8.

Thin Wires Far Away Observed

A SATELLITE EXPERIMENT conducted by the Air Force last year was impressive because of the smallness of the orbiting objects, and showed that the effect of charge drag on a long, thin cylinder is much less than had sometimes been predicted previously.

All satellites in orbit are subject to the bombardment of charged particles and to the flux of sunlight. A satellite, consequently, attains an electric charge that interacts with the plasma in space to exert a mechanical drag on its orbital motion. The effect of this charge drag on a large satellite's orbit is insignificant, but until this test was made there was considerable uncertainty about its influence on small, wirelike satellites.

The satellites used in this experiment were six pieces of wire, each 17/1000th of an inch in diameter and about 13 inches long. They were placed in orbit by a spinning dispenser that was designed, built, and tested at the M.I.T. Lincoln Laboratory. Their orbit was nearly polar, nearly circular, and at an altitude of about 2,000 miles. Yet at a radar frequency of about 440 megacycles per second—where the wavelength is twice the length of these wires—they could be detected individually by special radar-computer integration techniques.

As each wire passed through the beam of an RCA tracking radar at Moorestown, N.J., for a period of about two months, the transit time was measured. No systematic change in mean altitude was discernible in the results, which indicated that the decrease in mean altitude was less than a thousand feet per year. Thus, although the charge drag proved too small to be actually measured in this experiment, the uncertainty about its effect was greatly reduced. A full report of this small but significant addition to knowledge of the electrical properties of the space environment will be published in the *Journal of Geophysical Research*.

Demolition and Construction

MASSACHUSETTS AVENUE's appearance soon will be changed by demolition of the Hood Building at the corner of Albany Street, and its replacement by a one-story building to house laboratories and classrooms for the M.I.T. Department of Aeronautics and Astronautics.

The four-story, brick Hood Building was erected in the early 1900's and was for many years an ice cream plant. The government acquired it in 1946 for the use of M.I.T. researchers, a private firm occupied it for a few years in the 1950's, and it has been vacant for the last few years. The new educational facility on its site will be convenient to the M.I.T. Instrumentation Laboratory at 68 Albany Street.

Noise Record Holder

FRANK S. WYLE, '41, heads the laboratories at Huntsville, Ala., which claimed this year to have produced the loudest sustained noise ever created by man. The noise generator which provided it simulates in-flight noises of rocket engines and will be used to test components of Saturn launch vehicles. It can generate 30,000 acoustic watts with sound pressure levels of 167 decibels, yet "the beast" is so controlled that its roar cannot be heard outside of the test building.

How to Grow Old

GROWING OLD safely, says Dr. Egon E. Kattwinkel, '23, requires learning, laughter, and love of friends—and there was an abundance of all three at the M.I.T. Alumni Council's 364th meeting. William L. Taggart, Jr., '27, presided at this February 25 gathering in the Faculty Club, and both Dr. Kattwinkel and Donald P. Severance, '38, addressed the Council on aging.

Dr. Kattwinkel's admonitions and anecdotes dealt mainly with arteriosclerosis, an increasing menace because of our way of living. Tension causes much of it, he said, and a fellow can reduce this by having a variety of interests, not doing a single thing too long at a time, acting on problems he can meet, and walking away from others. Other factors about which a man can do something, he continued, are insufficient exercise, too much weight, and cigarette poisoning.

Mr. Severance discussed the aging of organizations. He recalled the M.I.T. Alumni Association's objectives, described its changing membership, and asked for feedback on a long series of suggestions for increasing its vigor and effectiveness.

The Council recognized at this meeting the M.I.T. Club of San Diego as the Alumni Association's 96th branch. Its President is William F. Helmich, Jr., '50; Vice-president, Bernard W. Mehren, '38, and Secretary-Treasurer, Richard I. Singer, '53.

Resolutions in memory of Godfrey Lowell Cabot, '81, were presented by William S. Edgerly, '49; and brief reports were given by Henry B. Kane, '24, on the Alumni Fund, and by F. Leroy Foster, '25, on plans for Alumni Day next June.

M.I.T. work in humanities, as well as engineering and science, will be stressed in this year's Alumni Day program, which will be concluded again by Arthur Fiedler and the Boston Pops in a special concert.

Radiation and Food

PARTICIPANTS in an International Conference on Radiation Research this year at Natick, Mass., included Robert E. Wilson, '16, of the Atomic Energy Commission and Professor Samuel A. Goldblith, '40, of M.I.T. The conference was held in connection with the initial operation of the U.S. Army Radiation Laboratory for the Preservation of Food.

This new facility, Dr. Wilson noted, uses a cobalt-60 source of 1,290,000 curies, which is the world's largest and the equivalent of an amount that it would take 26 billion dollars' worth of radium to make available. But this, he emphasized, is but one of the very many ways in which radioisotopes now are being used, thanks to co-operation between government agencies and industry.

Professor Goldblith reviewed studies of radiation preservation of foods and called attention to gains in over-all knowledge of wholesomeness which have resulted. More has been learned, too, about monitoring and controlling intense beams of high-energy particles, he pointed out, but "the future prospects for ionizing radiations in the food field still await the successful resolution of the secrets nature holds locked within the innermost molecular recesses."

Federal authorities authorized the use of radiation for the preservation of one food, bacon, a few weeks after this conference was held.



The New Center for Students

GENERAL PLANNING for an M.I.T. Student Center has been completed and means were being sought this spring to begin its construction. It will be a \$4,600,000 four-story building on the west side of Massachusetts Avenue, so placed as to form with Kresge Auditorium and the Chapel an architectural unit around a central plaza at the hub of M.I.T. community life.

The new building's upper story will be incased by a strong overhanging frieze supported by high columns above glass-enclosed lower floors. The Technology Store will occupy the whole ground floor, and above it there will be a two-story, glassed-in dining room, a large multi-purpose room, and several private and semi-private dining rooms. Food will be available at a number of separate counters in the large room, and there will also be a grill room on a mezzanine floor, facing the main plaza and extended on a sheltered balcony. The multi-purpose room will be suitable for lounging, banquets, lectures, or concerts, and together the facilities on this floor will serve several hundred persons.

The upper floor, cantilevered above the social and commercial areas, will form a deep and high protective loggia. It will provide 40,000 square feet of space for student organizations, and the building will be so constructed that a fifth floor can be added later without altering its character.

Below the store on the ground floor there will be a post office, barber shop, cleaning shop, snack bar, and bowling alleys. This underground "main street" eventually may be extended along a passageway under Massachusetts Avenue which would make crossing that busy street on foot much safer.

The Student Center, President Julius A. Stratton, '23, has pointed out, has a role of central importance in the effort to improve the campus environment and those facilities outside lecture halls and laboratories which also contribute in their own special ways to the intellectual and personal growth of students. It will give M.I.T. 150,000 more square feet of space and be the second largest Second Century Program structure.

The model above shows its location (the Chapel is in foreground) with respect to other existing buildings and a higher structure that is being considered.

A committee of students, teachers, and administrators, headed by Robert J. Holden, Associate Dean of Student Affairs, agreed on the basic objectives, and the building was designed by Eduardo Catalano, Professor of Architecture, in association with Brannen and Shimamoto of Cambridge.

"It is designed to fulfill a combination of requirements which are probably peculiar to this institution," says Kenneth R. Wadleigh, '43, Dean of Student Affairs. "It will complement our developing undergraduate and graduate residential systems, and provide cultural opportunities and commercial facilities not now readily available in our urban but somewhat isolated environment. It will also provide the physical facilities in which student activities and government, based upon our strong tradition of student freedom and imagination, may flourish. The Center will encourage more interplay between students and Faculty outside of the traditional classroom or laboratory environment. . . . We shall be experimenting for some time . . . what we achieve will depend in large part on students' imagination and initiative—and we are confident of success."

A Way to Help Foreign Students

A loan fund could supplement the 'hidden' aid they get now



Dean Pitre came to M.I.T. as an instructor in chemistry in 1920, and has been director of student aid since 1951.

BY THOMAS P. PITRE

Director of Student Aid and Asso. Dean of Student Affairs

FOREIGN STUDENT programs in American colleges and universities have of late been receiving considerable attention in the public press. With the emergence of new countries and the general desire to contribute to the education of the future leaders of the present underdeveloped nations, it is not too startling to learn that more than 60,000 foreign students are currently enrolled in U.S. colleges. Within the next decade projections indicate that most likely this number will double; this impact will pose many vexing problems for American colleges as it will come simultaneously with the increased demand from our own young people. One of the many critical problems that faces American colleges is how to provide from their limited and restricted resources of student aid adequate financial support for foreign students. An approach to the resolution of this dilemma may be suggested by a brief review of some of the factors involved in college costs and M.I.T.'s experience with almost an identical problem in 1930.

A survey of the annual cost of operation of privately endowed colleges shows the total of tuition fees collected falls far short of the total amount expended for the year's operation. There is wide variation among colleges in the percentage of the tuition fee to the total cost; in some colleges it may be as low as 35 per cent but in no instance do the tuition fees meet the total costs. There has been a general failure by the public to understand that *every* student, irrespective of his or his family's resources, receives a "hidden scholarship," i.e., the difference between the actual costs and the tuition fee. In every college student roster there is a certain portion who, in addition to the "hidden scholarship," receive student aid commensurate with their needs and the college's resources for this specific purpose. In the past few years many colleges have been forced to raise tuition fees to offset the increasing amount of the "hidden scholarship."

An Historic Problem

The imbalance of tuition fees and total operative costs is not a new or even a recent problem. More than 30 years ago a private institution, M.I.T., faced the problem of an increase in the tuition fee from \$400 to \$500. Simultaneously, as with all tuition increases, much consideration was given to the method by which student aid could be provided for those who needed help. It was concluded that scholarship funds could not be augmented sufficiently to meet this or future increases. As a result it was decided to experiment with a *revolving* student loan fund, whereby long-term credit would be extended in amounts covering several years' tuition. The interest rate was to be modest (it has never exceeded 2 per cent per annum) and the repayment rate was set initially at \$100 per year beginning six months after graduation.

This pioneering venture in student financing was launched in September, 1930, under the aegis of the late Gerard Swope, '95, who was instrumental in raising the original subscription of the fund, slightly less than \$1,500,000. It is of interest to note that 32 years later, June 30, 1962, the cumulative record of the fund

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Obtaining Water by Desalination

A review of what existing processes promise suggests the kinds of research now required

BY THOMAS K. SHERWOOD, '24

Professor of Chemical Engineering, M.I.T.

THE WORLD'S total water is enormous compared with the presently conceivable needs of man, yet there is a growing water problem. Ninety-nine per cent of the 320 million cubic miles of water in the earth's crust is salty, and useful neither for irrigation by present techniques nor for the majority of man's other needs.

Rain provides many times the world's annual water needs, but fresh water supplies vary extremely widely over the earth and from time to time in a given region. This accounts for the "water problem."

In the United States the annual water "withdrawal" from lakes, streams, and aquifers amounts to more than half that which is estimated by water engineers to be economically recoverable. Some is reused, but one-third of that withdrawn is evaporated and lost, so not available for reuse. The actual "consumptive use" is only about 12 to 18 per cent of the potential supply. Water prices are low, and on a statistical basis there should be no water problem for many years.

Average figures are of little comfort to the people of arid regions, however, and the United States, though relatively well supplied with water, is beginning now to turn to sources other than rainfall and runoff. The Southwest has too little water to support rapid industrial expansion. California is embarking on a multi-billion-dollar project to bring water nearly 800 miles to Los Angeles and the south from the northern part of the state. Two towns are now obtaining water by expensive desalination of brackish water from underground sources—one provides 650,000 gallons per day.

Desalination Processes

The obvious way to increase water availability is to recover fresh water from sea water or from the large underground stores of brackish water which are available in many arid regions. An alternative is to find ways to use saline waters for agriculture and other purposes for which we now require fresh water.

The various methods of separating water and dissolved salts have two things in common:

□ They all involve the same theoretical (minimum possible) work energy—4.12 kwh (kilowatt-hours) is required to separate 1,000 gallons of fresh water from sea water at 25 degrees C., leaving a concentrated brine containing the same amount of water (50 per cent recovery). This refers to electricity or other forms of *work* energy; the corresponding heat requirement varies with the temperature at which heat is supplied.

□ They all involve some sort of semipermeable membrane or phase boundary. When salt water evaporates, water, but essentially no salt, crosses the liquid-solid

THIS ARTICLE is based on the paper, "The Technology of Increased Water Availability," presented by Professor Sherwood and the late Harry Wexler, '39, at the United Nations Conference on the Application of Science and Technology for the Benefit of the Less Developed Areas, in Geneva on February 8, 1963.

interface. Ultrafiltration (reverse osmosis) and electrodialysis processes employ membranes which permit the passage either of water or of salt ions.

In processes in which water crosses the phase boundary, energy is required in proportion to the water recovered; the practical heat or work requirement depends little on the salt concentration of the water fed, whether it is sea water or slightly brackish water. In processes in which the salt passes the phase boundary, the energy required increases roughly in proportion to the salt concentration of the feed. Processes of the second type are accordingly less expensive to operate with brackish than with sea water supplies.

Multiple Distillation

The oldest and most-used process is distillation. Simple distillation requires roughly 1,000 British thermal units per pound of water vapor produced, but multiple-effect distillation, a great technical invention, makes it possible to reduce the heat requirement to less than 100 B.t.u. per pound. Variations of the basic process include vapor recompression (requiring electricity in place of heat energy), and multiple-flash evaporation (requiring heat transfer surface to condense vapor, but not for boiling).

The capacity of the world's commercial distillation units is now upwards of 20 million gallons per day, the largest unit having a capacity of 3.5 million gallons per day. The installations must be large if energy is to be used economically. Installed costs range from \$1 to \$2.50 per gallon per day.

The required low-pressure steam is an important factor in operating costs, and the possibility of providing steam less expensively by the use of a nuclear reactor has been studied. Although nuclear power is barely competitive with power from fossil fuels, the cost of nuclear reactors might be reduced by designing them to produce only low-pressure steam. One estimate for a 10-million gallons per day, multiple-distillation plant, supplied by low-pressure steam from a heavy-water moderated and cooled reactor, is that water could be produced for 63 cents per 1,000 gallons. Engineers at the Oak Ridge National Laboratory have recently estimated that the use of extremely large reactors might provide energy at such low cost that billion gallon-per-

day plants could be built to produce fresh water for less than 20 cents per 1,000 gallons.

Multiple distillation is the *principal* commercial desalination process. It is applicable mainly to large commercial or municipal plants, and fresh water costs are high in comparison to most water prices.

Solar Distillation

Solar stills have received considerable study and development because they can provide small quantities of water at moderate cost. Solar distillation is not a different desalination process, but a way of using solar radiation to eliminate the cost of fuel. Although the energy is free, the first cost per unit of capacity is high. Installed costs of glass stills covering less than one acre (including piping and auxiliaries) range from \$4 to \$7 per square foot, but inflated plastic stills promise to be less expensive. In the many regions of the world (including parts of the United States) where the incident solar radiation averages 2,000 B.t.u. per square foot per day, these stills can produce from 30 to 40 gallons of fresh water annually from each square foot of ground area. By any reasonable accounting, however, the water costs several dollars per 1,000 gallons.

Though expensive, solar stills are being used in increasing numbers to supply a few gallons per day in arid regions where the intensity of solar radiation is high. Small solar stills have been produced commercially in both Algiers and Australia. Ingenuity in design and in the use of materials will doubtless reduce the cost of solar stills, but it seems unlikely that they can compete with large multiple-evaporation units. They can be used, nevertheless, to serve small populations of arid regions in the developing countries.

Freezing Processes

Sea water begins to freeze at -2 degrees C. and the ice crystals formed are essentially salt-free. If sea (or brackish) water is partially frozen and the crystals are washed free of residual brine, the ice may be melted to produce fresh water.

Various separation-by-freezing processes are being developed. In one the freezing is brought about by the evaporation of an immiscible hydrocarbon liquid dispersed in the saline solution. The hydrocarbon vapor is then compressed and condensed at a higher temperature by direct contact with the washed ice crystals. Fresh water is separated by decantation, and the hydrocarbon liquid is recycled. The use of the hydrocarbon provides an internal refrigeration cycle, avoiding the use of metal heat transfer surfaces. The advantage over direct cooling by flash evaporation of the water itself is that the operating pressure is much higher and the required compressor much smaller.

Great hopes are held out for the freezing processes, and one of the desalination demonstration plants being constructed by the Office of Saline Water, U.S. Department of the Interior, will employ freezing. The major problem evidently is to design an efficient and inexpensive device to wash away residual saline water from a mass of very fine crystals.

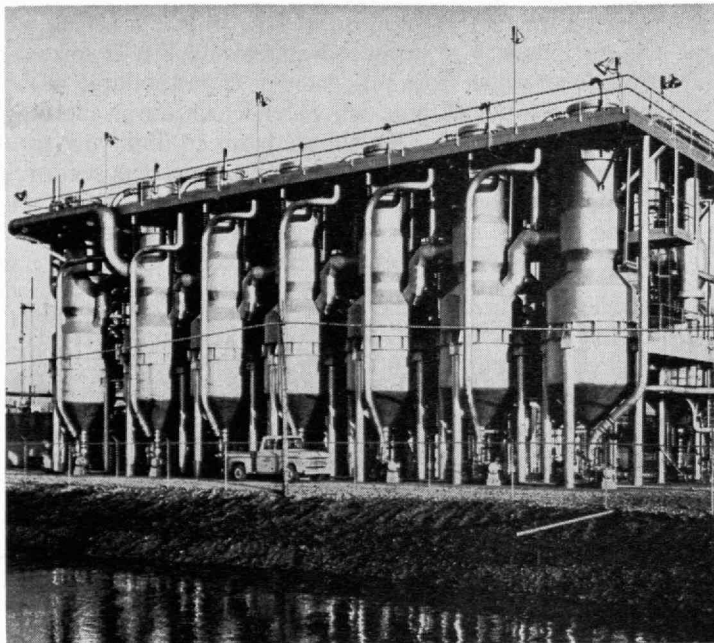
Performance data on commercial desalination plants employing freezing processes are not yet available, and cost comparisons cannot be made. Recent engineering analyses, however, suggest that freezing processes may be competitive with multiple-distillation processes for desalination, both as to costs and the applicable range of unit capacities.

A variation of the direct freezing process involves the precipitation of hydrates instead of water ice. Propane, for example, forms a solid crystal at 3.6 degrees C. when contacted with sea water under a pressure of 4.9 atmospheres; the solid contains approximately seven pounds of water per pound of propane. Propane can be employed simultaneously as the refrigerant in an internal refrigeration cycle to remove the heat of fusion. The crystals are washed, separated, and melted, the released propane being recycled. The crystals formed are small and not easy to wash free of brine, but the refrigeration is at a higher temperature than is required for the formation of water ice crystals, and should be less costly. Certain of the halogenated hydrocarbons form hydrates at temperatures as high as 15 degrees C.



Photos from U.S. Office of Saline Waters

A solar still installation in Florida is seen above. At right is a 12-effect evaporator (long tube vertical distillation process) at Freeport, Texas, to convert sea water.



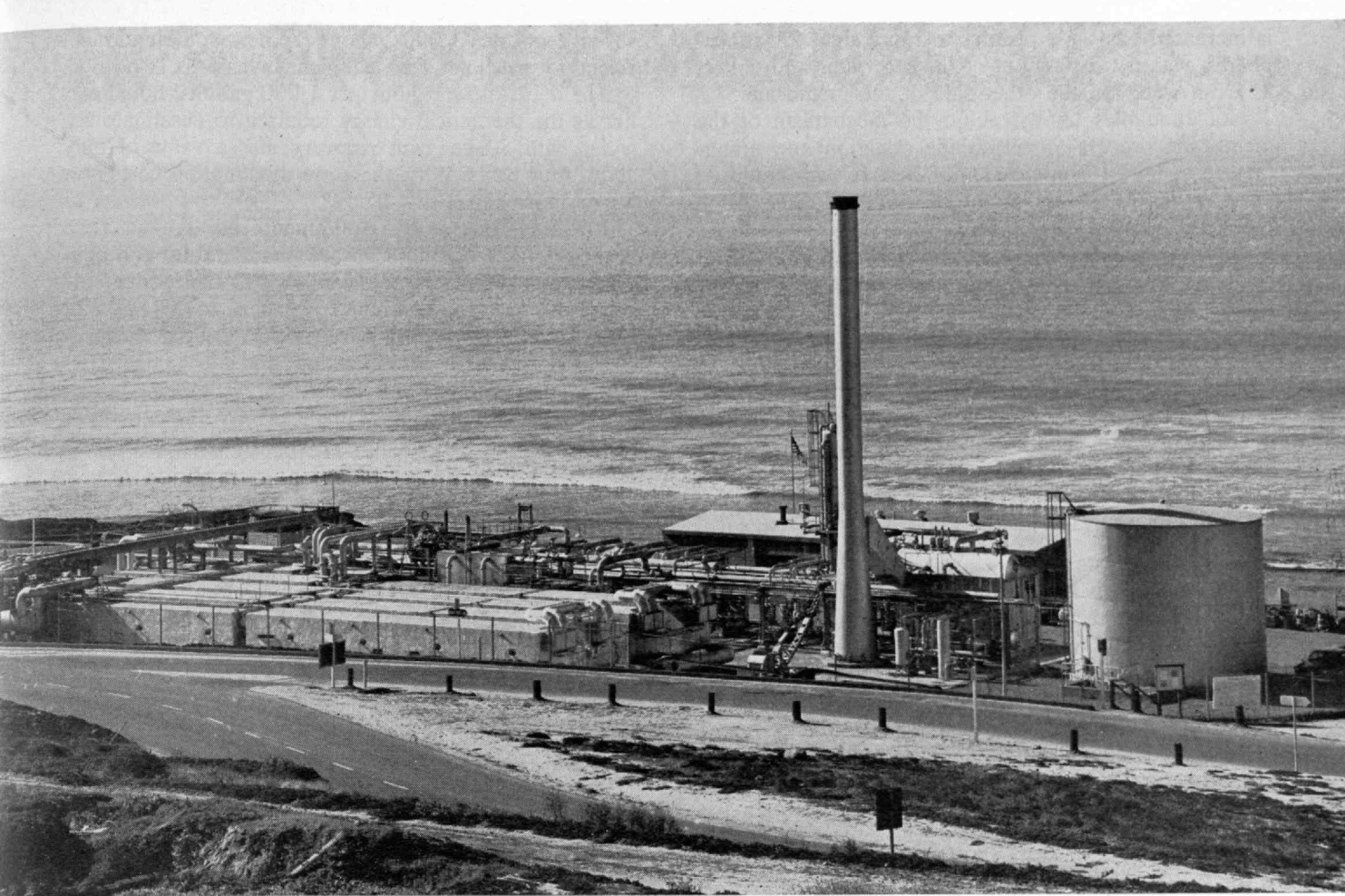


Photo from Fluor Corp., Ltd.

The first large multiflash plant in the United States, and one of the world's largest sea water conversion plants, is

at San Diego. It was built to study technical aspects of the process and ways of reducing costs.

Electrodialysis

The electrodialysis process is based on the discovery of "perm-selective" membranes. These are thin sheets of highly hydrated organic polymeric materials. There are two types: one is permeable to anions, and the other to cations. Neither permits the passage of appreciable amounts of water. An applied electrical potential causes ions to move through these membranes in opposite directions. They are arranged in stacks, the two types alternating, so that when the thin spaces between membranes are supplied with salt water, the applied potential causes alternate spaces to be depleted and enriched in both anions and cations. The over-all result is a multiplication of the amount of water purification possible by a single electrolytic cell.

In one sense, electrodialysis is to the electrolysis of water what multiple-distillation is to simple or one-stage distillation. Electrodialysis consumes (electrical) energy, however, roughly in proportion to the salt removed rather than to the fresh water produced. Hence, plants of this type appear to have wide application in arid regions where brackish water is available.

A number of electrodialysis plants ranging in capacity from a few thousand to three million gallons per day have been installed in the Near East, North Africa, the Netherlands, South Africa, and elsewhere. A plant at Buckeye, Ariz., operating on water containing 2,200 parts per million dissolved salts and having a capacity

of 650,000 gallons per day, is reported to have an installed cost of about 47 cents per gallon per day, and to produce potable water for approximately 50 cents per 1,000 gallons.

Distillation and freezing for sea water, and electrodialysis for brackish water are believed to be the only commercial processes* promoted at present by industrial concerns.

Other Processes

Of the many other desalination schemes which have been investigated, only one will be described. It appears to have as much or more promise than most, and is the subject of considerable current research in the United States.

This process is ultrafiltration, or reverse osmosis. Membranes exist which permit the passage of water but not salt. If such a membrane is placed between two compartments, one containing pure water and the other sea water, water will pass through the membrane, tending to dilute the sea water. If the sea water is confined, the pressure within it will build up to 23 atmospheres at 20 degrees C., the pressure being atmospheric on the pure water side. If the pressure on the sea water

*Ion exchange resins and zeolites are used to soften water, but are too expensive for the desalination of even moderately brackish water.

is increased (as by a piston) to more than 23 atmospheres, water will pass out of the sea water and collect as fresh water on the other side of the membrane.

Not enough is known about the mechanism of the membrane process to permit the selection and manufacture of useful osmotic membranes. If such could be developed the process might be quite efficient. With pressures of 40 to 100 atmospheres on salt solutions, good demineralization has been obtained, for short periods, at rates of several hundred gallons per day per square foot of membrane. But useful membranes will probably not be developed by trial and error; the basic physics of the process needs to be understood.

An interesting development applicable to this process is the experimental production of very small hollow fibers or tubes of membrane material. These tubes can have extremely thin walls, yet withstand high-pressure differentials, and can be packaged to provide an acre of membrane surface in one cubic foot.

Desalination Costs

Though cost is a major concern, the actual data on costs and cost trends in large-scale desalination are quite fragmentary. The only operating data on sea water are for distillation plants. Those built 10 or more years ago produced fresh water at costs of \$3 to \$5 per 1,000 gallons. Recent commercial plants report costs of \$1.25 to \$2 per 1,000 gallons. The Freeport demonstration plant of the Office of Saline Water is a small plant but is reported to produce water for roughly \$1.25 per 1,000 gallons. All of these figures refer to total costs, including fixed charges.

Recent estimates by competent engineers, not yet substantiated by operating data on actual plants, indicate that large multistage units (20 to 50 million gallons per day) can desalinate sea water for 60 to 70 cents per 1,000 gallons, or possibly somewhat less.

The trend of costs has been downward, but the curve would seem to be approaching an asymptote somewhere in the range of 30 to 50 cents per 1,000 gallons with energy from fossil fuels and sea water feed. Still lower costs are conceivable if enormous nuclear reactors can provide the needed energy at a fraction of current energy costs. Though clearly a matter of opinion, it does not now appear that further engineering refinements of present commercial schemes can lead to sea water desalination costs in the range of present U.S. prices for irrigation water—which are generally under

seven cents per 1,000 gallons. A new combination of scientific principles and technical inventions is needed.

The 4.12 kilowatt-hour per 1,000 gallons, noted earlier as the theoretical energy required to desalinate sea water with 50 per cent recovery, has a value of only about four cents. Why, then, are desalination costs now 30 or more times this figure?

Actual work-energy requirements are greater than the theoretical minimum because temperature and concentration driving forces involving thermodynamic losses are necessary. Transfer of heat to a region of lower temperature, mass transfer resulting from a chemical potential, Joule heating, and mechanical friction account for the principal losses. They can be reduced if the equipment is made larger, but a balance must be struck between the cost of equipment and the cost of these losses.

In distillation, the transport of water across the liquid-vapor interface involves little thermodynamic loss. Serious losses, however, result from the use of large temperature differences between condensing steam and boiling water. Reverse osmosis, by contrast, involves large losses at the membrane separating the phases; the necessary work-energy can be supplied with good efficiency by a pump. What seems to be needed is a process having the high "membrane" efficiency of evaporation, but with energy supplied as efficiently as in reverse osmosis.

Numerous desalination studies have been directed to the improvement of heat transfer coefficients so as to reduce losses due to temperature differences, but most have employed expensive forms of heat transfer surface and the added fixed costs tend to offset the savings. Studies directed to improvement in the energy efficiency of processes employing electricity would appear to offer greater promise. It seems possible, for example, that osmotic membranes will be developed which permit economic flow rates at twice the osmotic pressure (and twice the theoretical energy), or perhaps even much less. Various magnetic and electrical effects may be employed to cause ion transport and effect separation. The electrodialysis "stack," now being applied effectively for the desalination of brackish waters, is perhaps a forerunner of better electrical processes, yet to be invented.

Needed Research

Desalination research and development in the United States has been devoted largely to engineering modifications and refinements of older processes. The Office of Saline Water of the U.S. Department of the Interior is now embarking, however, on an expanded program of basic research. A conference organized by the National Academy of Sciences in the summer of 1961 strongly emphasized the need for more fundamental research on water, electrolytes, transport of both water and ions in the liquid phase, across phase boundaries, and in membrane materials. Too little is known about salt solutions. Data on thermodynamic properties of sea water at elevated temperatures are not now available. The mechanism of scale formation and the growth of deposits on heating surfaces is not understood. What is the effect of sound vibrations, magnetic, and electrical fields on transport and on scale deposition and growth? What are the barriers to transport of either

(Concluded on page 42)

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In a Frog's Eye . . .

Fascinating clues to the creature's intelligence and stupidity have been found in a hemisphere in an electronics laboratory at M.I.T.

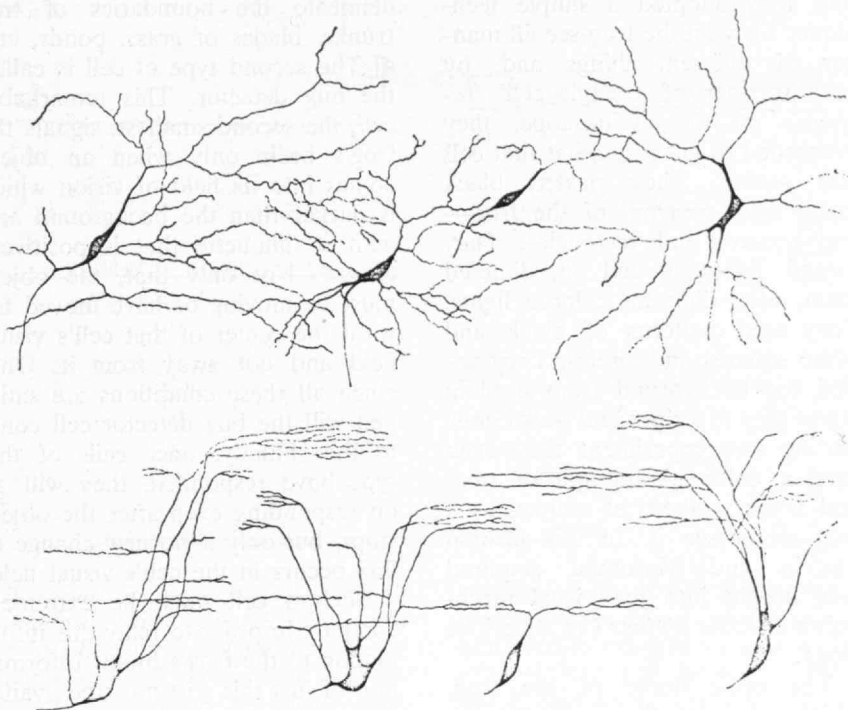
BY SAMUEL JAY KEYSER

BEAUTY, 'tis often said, is in the eye of the beholder. Jerome Lettvin, '47, Associate Professor of Physiology, and Humberto Maturana, a research associate on leave from the University of Chile, have exposed the details in the eye of a frog. To find out just what the frog's eye tells the frog's brain, these experimental epistemologists have studied for three years now the neurological machinery behind the moist, bulging eyes so appealing to children and fairy-tale writers.

"The frog," says Lettvin, a poet, inventor, and former psychiatrist in the U.S. Army, "does two things extremely well. He catches bugs and eludes birds. He does these things so well, in fact, that he has been able to survive on this planet for 2,000,000 years, a not inconsiderable achievement for so modest a creature."

What role has the eye played in this longevity? To examine it, Lettvin and Maturana have made their part of the Research Laboratory of Electronics resemble a lily pond. Their frogs (obtained from Harvard) perform behind a large metallic hemisphere which limits their visual field, and in which various visible objects are introduced.

First, of course, the masters of this artificial environment had to



Four ganglion cells such as are found in a frog's retina. They analyze incoming light patterns according to fixed, inherent visual categories.

devise a way to tell when the frog saw things. This was easy. The optic nerve was exposed by careful surgery, and a platinum-tipped micro-electrode, which records from only one or a few nerve fibers at a time, was inserted. Then objects were shown to the frog and moved, with the aid of a magnet, against the inner surface of the hemisphere. When the fibers were stimulated, a characteristic pattern appeared on the oscilloscope attached to the other end of the electrode. A loud-speaker was also attached so that the scientists could both see and hear when the frog was seeing. *What* the frog was seeing was an entirely different story.

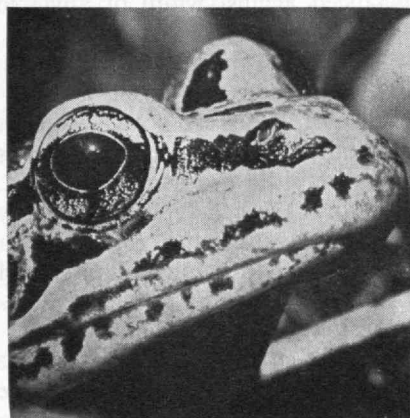
Amid the myriad of objects that pass before him (including rowboats, fishermen, and empty beer bottles) the frog apparently can distinguish which object is a bug,

something to grab for, and which an enemy, something to run from. The frog, in other words, can analyze the patterns of light and dark that impinge upon the retina and determine whether they spell out dinner or danger, and Lettvin and Maturana asked, "Where does this analysis take place?"

Eye or Brain?

There were two possibilities. The analysis could take place in the visual centers of the frog's brain. In this case the eye and the optic nerve would act simply as a set of relays between the outside world and the brain by straightforwardly transmitting a dot picture for the brain to analyze. The second possibility was that the eye itself performed the analysis essential to survival.

Lettvin and Maturana opted for the second alternative. They rea-



soned that from the frog's point of view the second was certainly preferable. By permitting quick recognition of bird and prey, it would give him a better chance to eat and not be eaten. The eye, moreover, is better equipped since it contains about 15 times as many nerve cells as the visual centers of the brain.

Having decided where the analysis took place, Lettvin and Maturana next asked, "How does the analysis take place?" To investigate this, they adopted a simple technique. They let the frog see all manner of different things and, by keeping track of a single cell's response on the oscilloscope, they proceeded to guess at what that cell was seeing. They passed black metal discs in front of the frog—and squares and rectangles. They turned lights on and off, dimmed them, used different colored lights. They used patterns of black and white squares and circles. They varied the background from a plain matte grey to stripes and polka dots. During one experiment they even used a color photograph of trees and flowers taken, of course, as a frog might see it. In this fashion Lettvin and Maturana acquired new insight into the visual mechanism of *Rana pipiens* (an American frog).

The optic nerve of the frog, which connects the eye with the brain, begins at the eye in so-called "ganglion" cells. There are some 450,000 such cells in each eye. This vast number of separate cells, Lettvin and Maturana were able to determine, exhibits essentially five

basic types. Each cell type is characterized by certain properties.

¶ The first type, called the edge detector, is the smallest. The edge detector tells the brain where all the edges are in that cell's particular field of vision. Taken together, the edge detectors produce a picture much like a regular black and white camera does, but showing nothing except where the edges are, the borders between the black and the grey. In the frog's world, these cells delineate the boundaries of tree trunks, blades of grass, ponds, etc.

¶ The second type of cell is called the bug detector. This remarkable cell, the second smallest, signals the frog's brain only when an object comes into its field of vision which is darker than the background and with a silhouette that is positively curved. Not only that, the object must be moving or have moved toward the center of that cell's visual field and not away from it. Only when all these conditions are satisfied will the bug detector cell come to life. Finally, once cells of this type have responded, they will go on responding even after the object stops, but only if no new change of flux occurs in the cell's visual field.

Such a cell must be extremely complex in order to relay this information to the frog's brain. Information of just this sort must be available to the frog quickly to enable him to catch a bug moving toward him. But he must also be able to tell the difference between prey and predator, and the necessary additional information is provided by the remaining cell types.

¶ The third type, which Lettvin and Maturana call the event detector, responds to changing patterns. These cells respond to any movement, or to a rapid turning off and on of a light. They, in effect, alert the frog to a change in the *status quo*.

¶ The fourth cell type, called the dimming detector, tells the frog whenever a downward change in light intensity has occurred. It doesn't matter how bright or dim the light may be, only that a certain proportional dimming has occurred. In some instances the frog's dimming detectors have responded strongly in a nearly dark room to changes just barely perceptible to Lettvin and Maturana.

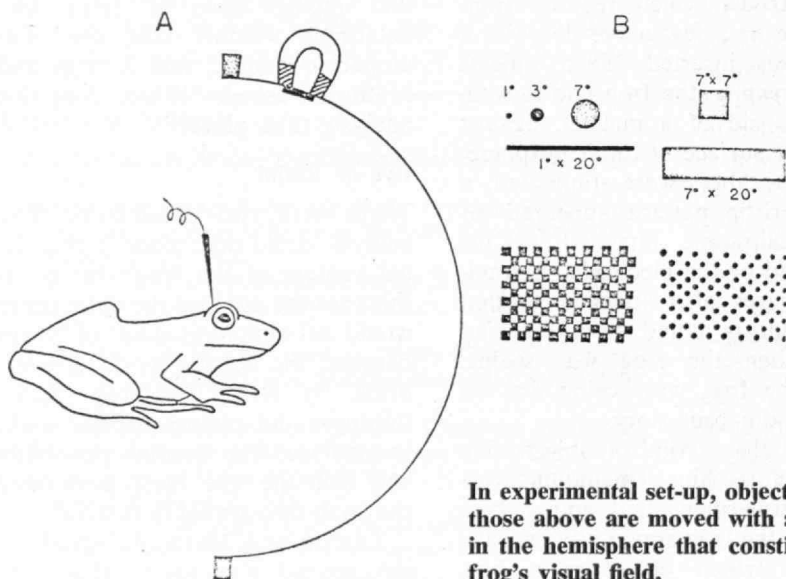
¶ The fifth and final cell type is called the color detector. First discovered by W. R. A. Muntz, one of Lettvin's collaborators, this particular cell type has the property of responding to that shade of blue which is best described as "watery."

Overlapping System

Each of these cell types is distributed uniformly over the frog's retina. Moreover each cell has its own visual angle, that is, a small part of the world that it can see. Measured in degrees (in Lettvin's and Maturana's experimental set-up, each degree equals an eighth of an inch arc on the hemisphere), the edge detector has a visual angle of 2-3 degrees, the bug detector 3-5 degrees, the event detector 5-10 degrees, the dimming detector 10-15 degrees, and the color detector about 10 degrees. Of the half million cells in each retina, the small-angle edge and bug detectors constitute 97 per cent and the larger-angle event, dimming, and color detectors, only 3 per cent of the total. Thus the number of cells is balanced against width of angle in the frog's retina.

The frog, unlike human beings, has no center of visual acuity—each part of his eye sees as well as any other—because each part acts as a tiny little eye in its own right. But since the cell types are equally distributed over the frog's retina with respect to numbers and size of the visual angle, the respective fields of vision greatly overlap.

This overlapping system of five types of cells enables the frog's eye to extract from his surroundings the



In experimental set-up, objects such as those above are moved with a magnet in the hemisphere that constitutes the frog's visual field.

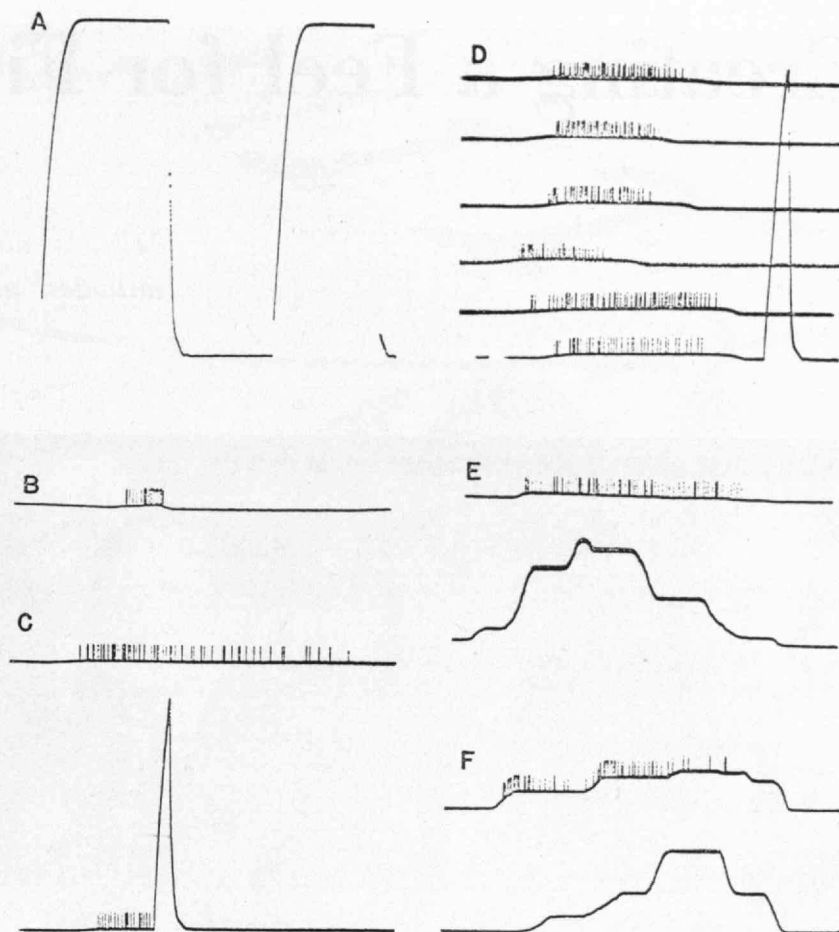
essential features required for his survival. A hungry frog placed in a cage with freshly killed insects will starve to death, but in the frog's natural habitat insects are not served up freshly killed. They are on the move, and Lettvin and Maturana have shown that the frog is well suited to a world of moving things since four of the five types of detectors will respond in one degree or another to movement.

Food, Foes, and Phonies

Most of the moving things in the frog's world that turn out to be insects are small and curved. The frog's bug detectors are eminently qualified to single these out. When Lettvin and Maturana show the frog a large color photograph of the natural habitat of a frog and move the entire picture back and forth, while recording the bug detector response, nothing happens. But when they perch a fly-decoy against the picture with a magnet and move it about in as fly-like a way as possible, leaving the photograph stationary, the bug detector responds with gusto.

This experiment, designed to show that a frog's bug detector responds only to a single small object, also shows, of course, that the frog is easily fooled. But in his natural habitat the odds are that an approaching small round object is a bonafide bug rather than Drs. Lettvin or Maturana.

But what of an enemy? Birds and snakes, for example. While the frog is waiting for the fly to approach within tongue's reach, a snake may crawl up from the side. This motion will be detected by the event detectors. They will tell the frog that something is happening in their particular bailiwick of experience, and if it happens again or continues to happen the frog will leap away. Or suppose a hawk swoops down: As the hawk, who always attacks with the sun at his back, comes closer, he will block out more and more of the light that reaches the frog's eyes. The dimming detector then will signal that a large shadow is happening, and the frog, thus alerted to danger, will leap away. And where will he leap to? If his color detector registers a watery blue nearby, he will leap toward it and, in all probability, land with a splash in the center of safety.



Characteristic patterns of a frog's stimulated bug detector look like this on oscilloscope: A indicates no response to on-off illumination; B, activity at introduction of small, dark, moving object; C, continued response (above) after object stops and (below) response erased by change in flux in original field; D, invariant response even during changes in illumination to

moving bug-like object; E, response to small moving round object (above) compared to insensitivity to a straight edge introduced to the field of vision; and F, response to a corner of a dark band indicating sensitivity to positively curved objects (above) compared to the absence of a response in the other trace (below) to a straight edge. Other types of detectors respond differently.

As fascinating as it is, the discovery of five cell types and the part they play in the frog's survival is only half the story. Lettvin's and Maturana's initial guess that it was the eye and specifically the ganglion cells which abstract from the frog's environment the features essential for survival turned out to be correct. They next asked themselves how this abstracted information was transmitted from the million ganglion cells of the frog's retina along the optic nerve to the visual centers of the frog's brain, the superior colliculi.

They have found that the fibers of the optic nerve are braided together in a fashion which bears no relationship at all to their place of origin in the retina. The fibers cross one another in a thoroughly random

fashion. Yet when these fibers reach the frog's visual centers, they divide out in a remarkable fashion. The color detectors veer off into a portion of the frog's brain called the lateral geniculate, and when the other four types, still randomly braided, move into the major portion of the frog's visual centers they suddenly spread out into four mosslike layers, one on top of the other like a stack of pancakes.

Each layer corresponds to a cell type in the retina. The first or outermost layer corresponds to the edge detectors, the second layer to the bug detectors, the third to the event detectors, and the deepest layer to the dimming detectors.

Lettvin and Maturana have uncovered two remarkable facts about
(Continued on page 36)

Creating a Feel for Fitness

M.I.T.'s athletic program emphasizes skills, attitudes, and habits helpful to its students



SPECTATORS on February 13 included: From left in front, Chenery Salmon, '26, Kent Hansen, '53, Stuart Edgerly, Jr.,

'46, Richard Harris, '63, and Ross Smith; and in rear, John Merriman, Peter Close, and Richard Erickson.

PRESIDENT KENNEDY'S interest in physical fitness is widely shared at M.I.T. "Primarily," says Ross H. Smith, Director of Athletics, "we aim to develop an appreciation for health as it contributes to happiness and success in life."

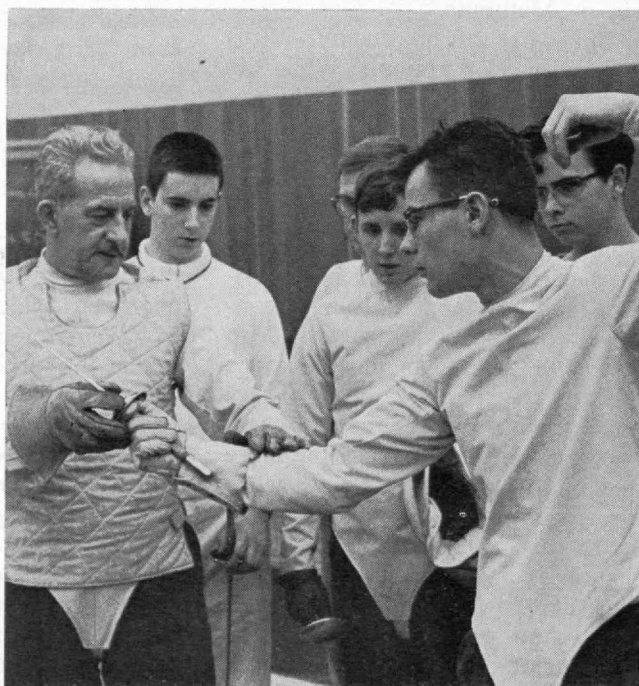
The Institute's Department of Athletics created in 1947 provides an instruction program in physical education to introduce students to sports of their choice, with emphasis on activities which they can continue after being graduated. The success of this program is best judged, in Smith's opinion, by the degree of participation in athletics:

❏ More than 4,500 students and 1,000 members of the Faculty and staff now use the varied athletic facilities which have been provided.

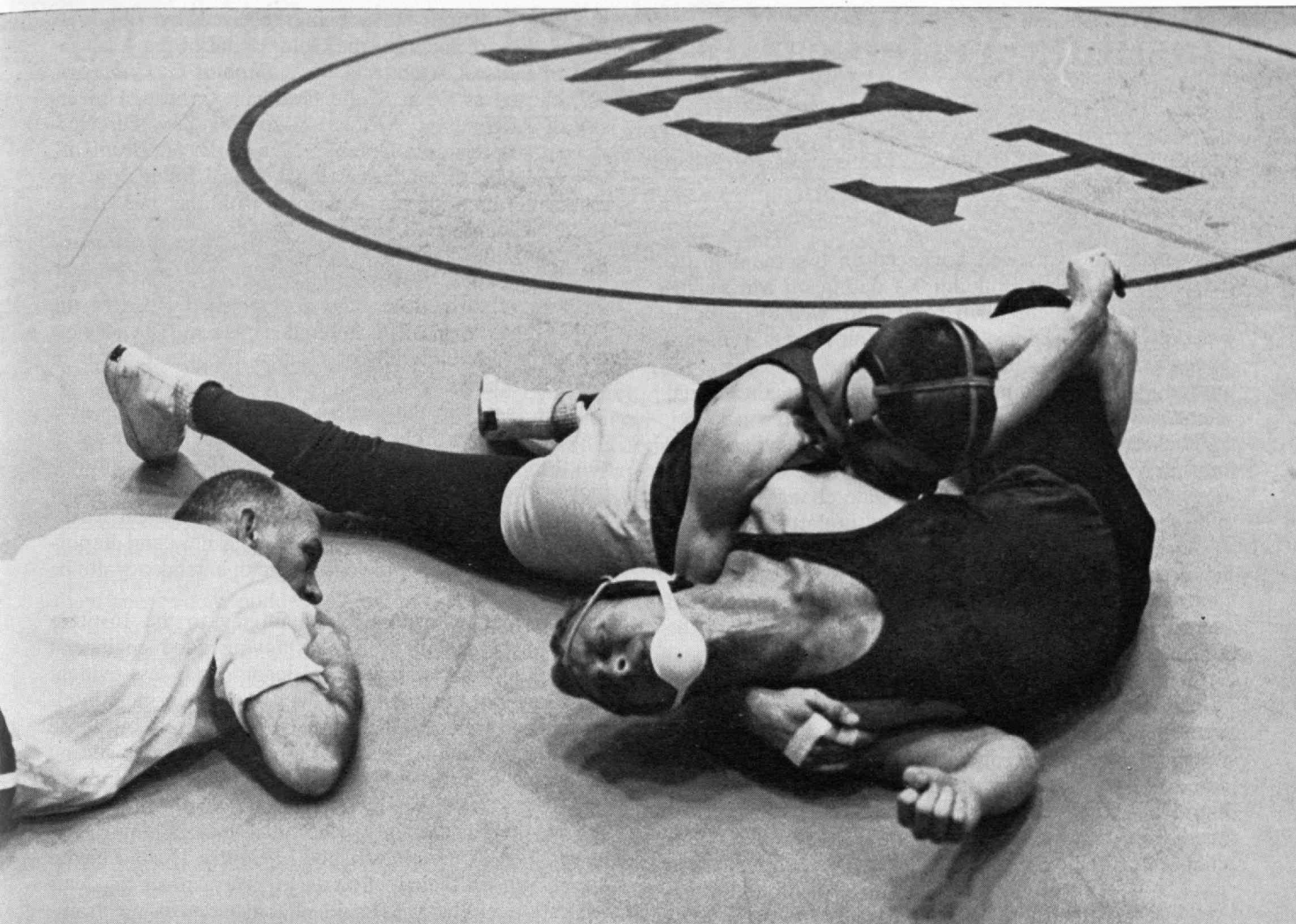
❏ Intramural competitions in 15 sports involve more than 800 students each year; there were 600 participants and 58 teams in intramural basketball this year, and 350 students were involved in the 24 intramural hockey teams.

❏ Varsity and freshman teams in 18 sports represented M.I.T. in intercollegiate athletics.

This sports pyramid, provided to offer something for everyone, was being reviewed by the M.I.T. Athletic Board last February 13, when George Woodruff took the pictures on this and the next page.



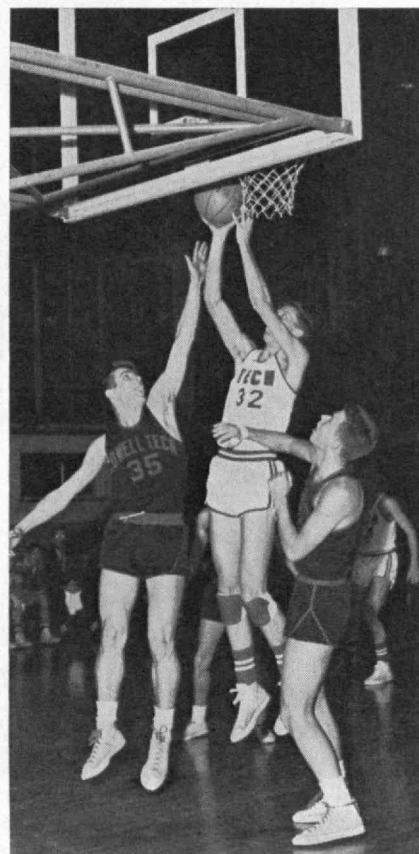
Coach Silvio Vitale showed Lee Stratton, '66, the proper fencing technique while visiting high school boys watched.



Co-captain Jim Evans, '63, pinned a Wesleyan opponent to mat (above) and Jack Moter, '64, jumped to score (at right) in basketball against Lowell Tech.



Outdoors as well as indoors, there was action for visiting alumni members of Athletic Board. Above, M.I.T. freshmen are playing Middlesex School.



Institute Yesteryears

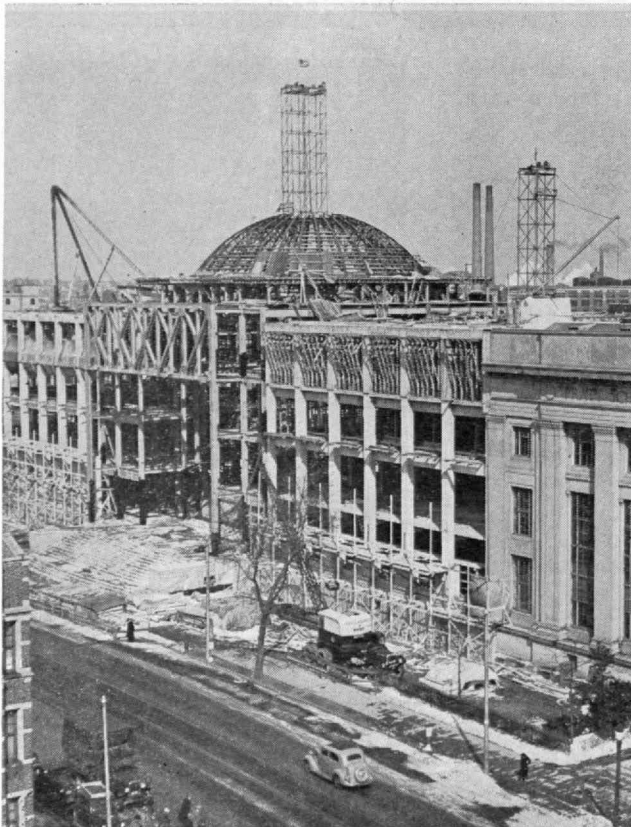
As recalled by the late H. E. Lobdell, '17

25 Years Ago

CONSTRUCTION was well advanced on two major projects, the first being Building 7 fronting on Massachusetts Avenue, which, when completed, was to be dedicated as a memorial to William Barton Rogers. Building Seven's 1,600,000 cubic feet made it, *The Review* reported, "the largest increase in the main educational plant in Cambridge since 1916."

The second project was the Wright Brothers Memorial Wind Tunnel, "designed to develop wind velocities up to 400 m.p.h. and to simulate changes in barometric pressure at any theoretical altitude up to 35,000 feet. . . . [It] may be operated under pressures up to four atmospheres, which will yield a Reynolds number comparable to full-scale flight, or it may be operated below atmospheric pressure, enabling studies to be made of substratosphere flight at high speed. . . .

"The new tunnel doubtless will not be available, however, for such ulterior use as the one recently suggested by a national magazine. A bright young editorial writer sought vainly to borrow a wind tunnel in which he could suspend several women and determine the amount of wind velocity necessary to remove from their heads and blow to destruction the currently popular chin-strapped hats."



DOM NO. 2 was nearing completion in the spring of '38 and was scheduled to be named and dedicated on June 6.

¶ Congratulations were being received by *Louis A. Simon, '91*, recipient of the Gold Medal of the Association of Federal Architects . . . *Thomas G. Chapman, '09*, chosen as Dean of the Graduate College, University of Arizona . . . *Edwin S. Burdell, '20*, Director-elect of the Cooper Union . . . and *E. H. Bramhall, '27*, recipient of a Congressional Medal for his part in the exploration of the Antarctic with the 1933-1934 Byrd Expedition.

50 Years Ago

PROFESSOR Arlo Bates, the distinguished Head of the Department of English, entered a plea in *The Review* for "the rehabilitation of Course IX, the Course in General Studies.

"The fact that the Course in General Studies was a departure so entirely new kept it small, and made it sure to be misunderstood," he wrote. "Even the authorities of the Institute seem to have been too much given to regard Course IX as a concession to human weakness, and instead of being proud of a new and important step in education, to have had a tendency to be half apologetic.

"The men who contributed money to the Institute could easily see the value of making good engineers; the making of good industrial leaders was less evident to them. It was intangible to the ordinary business intelligence, and came quickly to be recognized by those soliciting funds for the school as of small money-getting power. The most valuable and significant feature of any fresh scheme is generally the one likely to be least appreciated, or certainly to be longest in gaining recognition. Just as the men trained in Course IX had begun to get well on their feet so as to give a practical demonstration of the value and effectiveness of the training, the Course was abolished altogether.

"Whatever causes may have had to do with this unfortunate step, the ostensible reason was that the number of students taking the Course was too small to warrant the expense of its upkeep. . . . What pays and what does not pay in a school of this kind is a question too subtle to be determined by mere bookkeeping. . . .

"In the reckoning up of the value of Course IX to the Institute must be included the importance of having among its alumni men holding influential positions in lines of business other than engineering; the strengthening of the position of Technology by an increased public recognition of its influence in broad and progressive education, with a wider vindication of the fundamental principle upon which rests our whole scheme of training; the direct and indirect influence upon the undergraduates pursuing technical courses of the frank insistence upon the worth of the humanities in practical life. Any one of these things would seem to me a sufficient reason for the maintenance of Course IX, although personally I should incline to give greatest weight to the third. To consider whether a Course 'pays' without taking all these points into account is to treat the question with inexcusable superficiality."

¶ On April 21, 1913, at the "Gramophone Building," 357 St. Catharine Street West, Montreal, P.Q., a gathering of Alumni founded the "Technology Club of Lower Canada," now titled the M.I.T. Club of Quebec.
(Concluded on page 47)

What Is a Good Experiment?

The new instrumentation laboratory in the Biology Department has the same desirable characteristics as a teaching machine

BY KURT S. LION

Asso. Professor of Applied Biophysics

I LEFT the office at about a quarter of six; there was still light in the student laboratory, so in passing by I dropped in. Three graduate students were sitting in front of one of the experimental set-ups, adjusting instruments, observing meter readings and taking notes.

"Still busy?" I asked. One of them turned and nodded. "Kind of . . ." he said.

"If any one of you is married, I suggest that he go home for dinner," I said. Another one looked up: "No danger," he said; then after a while: "That is a darned good experiment." I smiled and went out.

From all I can observe, the establishment of a new student laboratory, devoted to the teaching of instrumentation (i.e., physical research methods) to biology students

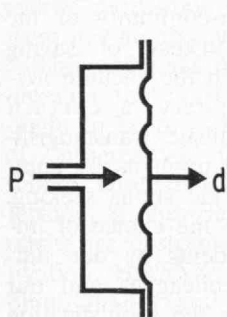
and medical research workers, has filled a great need. Until after World War I, instrumentation was taught as a part of a general physics course. Students in the physical sciences, the life sciences including medicine, and the engineering sciences received instruction in basic physics and learned about measurements in the same course or an associated laboratory course. This method of instruction was in general satisfactory, and generations of scientists and engineers emerged well enough equipped to carry on creative research and developmental work.

The great advances in atomic physics, relativistic, quantum mechanics and nuclear physics brought a change. To accommodate the large amount of new material, the basic physics course became more of a

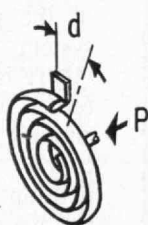
course in theoretical physics. At the same time, research methodology and instrumentation also underwent a revolutionary development, which was more than could be covered in a student physics laboratory. As a result, the student of today is comparatively less educated in instrumentation than one of the former generation—yet the demand for research workers skilled in instrumentation is larger than ever before.

Teaching a field as wide as instrumentation may seem an impossible task. When the subject matter is organized in the form of "Instrumentation Elements,"* however, the field becomes manageable and can be taught without danger of

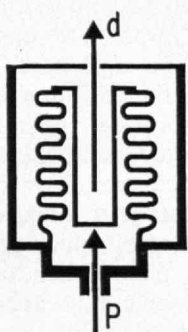
*See "The Elements of Instruments," The Technology Review, 62: 36 (1960), No. 6, April.



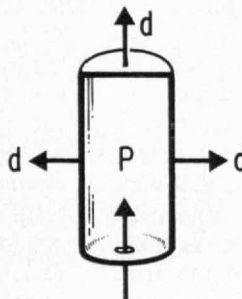
Membrane



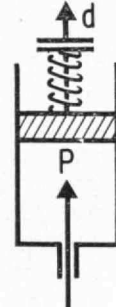
Bourdon Spiral



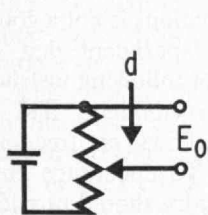
Bellows



Expanding Tube



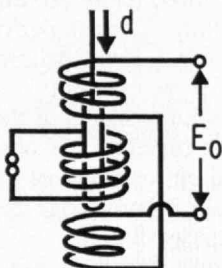
Piston



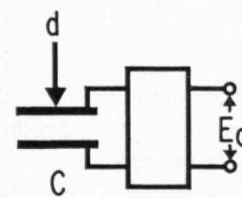
Slide Wire



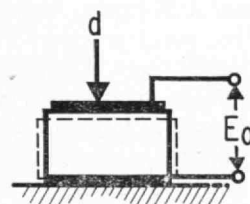
Strain Gage



Inductive



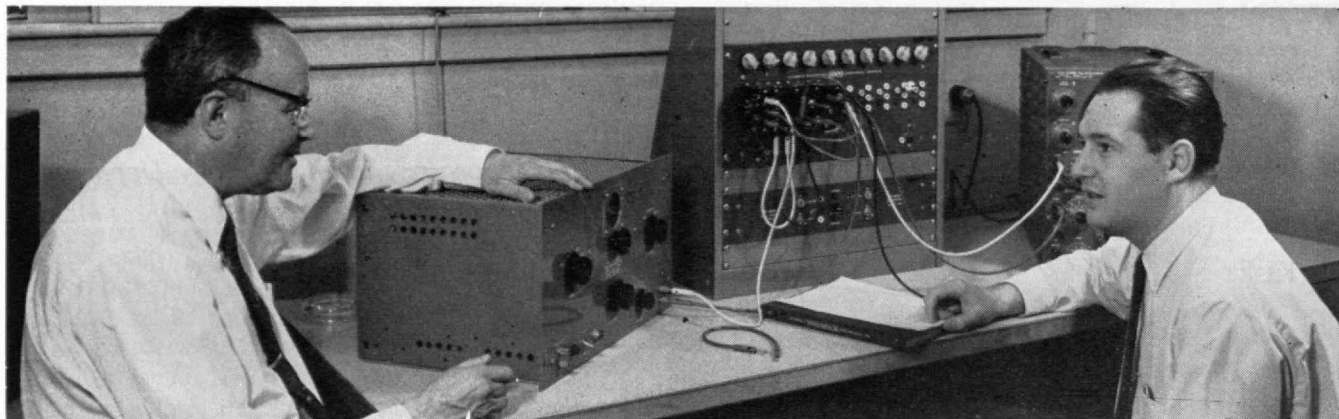
Capacitive



Piezoelectric

Basic mechanical systems in upper row convert pressure into mechanical displacement. Those in lower row convert displacements into analogous electric signals. By combining

any of the upper with any of the lower systems, 25 indirect electric pressure-measuring systems can be synthesized. There are also direct pressure-to-electric transducers.



The author (at left) discussing an analogue computer in the new laboratory with an associate, Tibor Foldvari, '61.

superficiality. The number of basic instrumentation elements is limited and all elements—existing ones as well as future developments—can be classified in a 7 x 7 matrix. Knowledge of these basic building blocks enables a research worker to synthesize new systems and instruments for optimum performance.

Why Have a Laboratory?

Before each experiment was planned for the new instrumentation student laboratory in the Department of Biology, a study was made of what is a good experiment. The laboratory was developed under a grant of the National Science Foundation. During the preliminary discussions at the NSF, one of the officers suggested we start by discussing the general plan with colleagues in other departments. The suggestion appealed to me, and when the grant was made, I started to poll opinions in an informal way, not only at M.I.T., but also from friends, visitors, students, Alumni, men in industry, and, on my trips abroad, in universities in Europe.

An interview may have taken the following course: "We are going to set up a new student laboratory in instrumentation; do you think a student laboratory is a good thing?" The usual answer: "Very important, I think I learned more in a student lab than in any other course." (Most people polled argued from their own education and experience; the considerable amount of modern literature on education and psychology is in general not read by science teachers.) Next question: "Why is a student laboratory a good thing?" Now, this is a question of the type: Why do we live? Only a person who has given

much thought to the problem of education will be able to answer it adequately. But it was posed to evoke a reaction, and from the answers we extracted helpful ideas.

Almost everybody was in favor of a student laboratory (there was one exception, a theoretical physicist in Copenhagen who said that he had gone through a pretty dull laboratory which he would not recommend to any student). A student laboratory was primarily recommended for the purpose of forming concepts of physical quantities which, when studied from a book or lecture, frequently remain mere mathematical symbols. A student laboratory frequently offers an outlet for the student's desire for activity and, if possible, creativity in contrast to the more passive and receptive function of attending a lecture. Furthermore, the many-sided aspect of a student laboratory, which involves calculation of the expected results, selection of a method, overcoming technical difficulties, observation and presentation of the results, has something appealing to many students. One factor was mentioned which remained unexplained: Frequently, if one tells a student that a circuit performs in a certain way, he will believe it—and possibly forget it. But if a student takes the components of this circuit, puts them together and observes the predicted performance of the circuit, the acquired knowledge becomes a permanent possession.

Academic teaching has a multiple goal; it serves to teach facts, and it tries to instill in the student an attitude of appreciation for knowledge and learning so that he will continue learning after hours and after graduation.

Thought Is Essential

The more an experiment serves to attain the above-mentioned goals, the better it is. Many laboratory experiments are designed only to teach facts. Even that can be done with different degrees of success. The principal virtues of the "Lab sheets" (the written descriptions of experiments which are handed out) seem to be simplicity and emphasis on the basic facts underlying the experiment. It does no good to write: "The observation of the increased reduction of pressure diminishment in the system is hypothesized to reside in the inverse relationship between the relative quantity of gas transfer and the absolute magnitude of the partial discontinuity of the system walls," instead of saying "there is a leak in the vacuum system." Unfortunately, a certain amount of "linguistic transmogrification" is forced upon us by competition in scientific status seeking, but we still have the choice of impressing our students by our simplicity, or our colleagues and our administration by the sophistication of the subject matter.

In general it was recognized that a laboratory in which the student just follows instructions is not a good laboratory. An experiment that is merely a matter of following instructions requires no thought, and a laboratory that allows no freedom stifles creativity. To encourage creativity the laboratory should provide the student with enough information to get a grip on the problem, but leave some questions unanswered, and permit a variety of approaches. The student should be allowed to make mistakes in thinking as well as in following directions.

Ideally, he should care about the problem and not about the instructor.

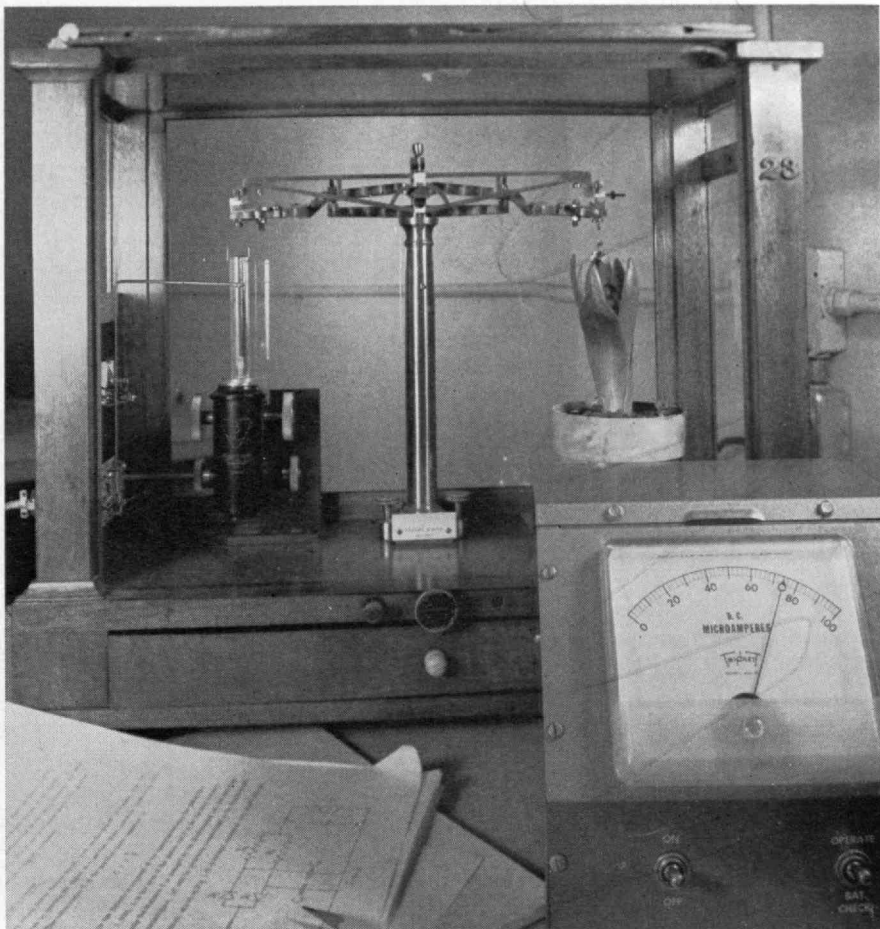
A most logical and impersonal method of instruction which has lately come to the foreground is a teaching machine with a well-written program. It acts, according to B. F. Skinner, as "the student's personal tutor"; it adapts to the student's pace and needs, it introduces the subject matter in small logical steps, and it permits the student to test his acquired knowledge continuously. It seems quite obvious that a considerable amount of our teaching in the future, especially in mathematics, physics, instrumentation, and the engineering sciences, will be carried out with the help of teaching machines. It is interesting to note that a good student experiment has many of the characteristics of a teaching machine; it is, in effect, a teaching machine.[†]

Finally, a good experiment gives a student more motivation than that stemming from the authoritative means of the educational system (e.g., grading). The experiment should contain an element of attraction, challenge, surprise, cause of disbelief, or be of personal interest for the student (for instance, his health). Of course, different personalities react differently to such challenges; therefore, the problem of injecting motivation into an experiment has no absolute solution.

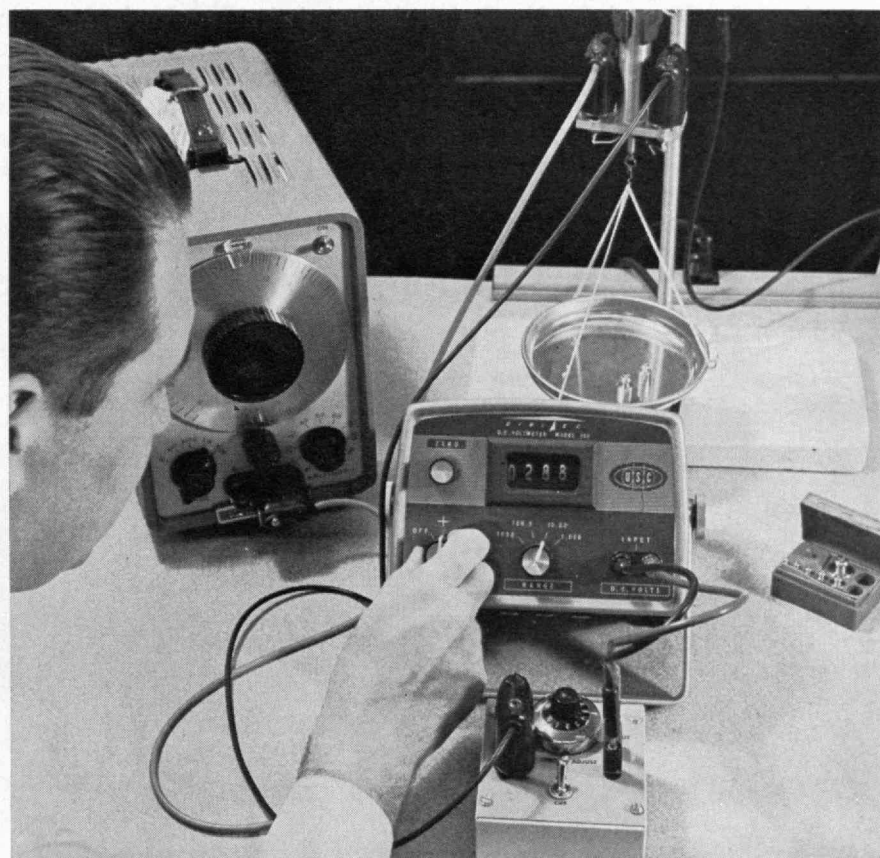
The reader should not get the impression that a student laboratory ought to be run like a certain type of "progressive" (i.e., permissive) school. Discipline, even anxiety and tension, if they lead to self-discipline, are desirable sources of motivation. However, too much discipline, anxiety and tension are dangerous; the constant burden of an inferiority feeling can cause even the best student to sell his books after graduation and quench his thirst for knowledge by reading trade journals.

The news of the establishment of an instrumentation student laboratory in the Department of Biology at M.I.T. evoked a remarkable response: Within about two months, requests for further information were received from 48 colleges and universities.

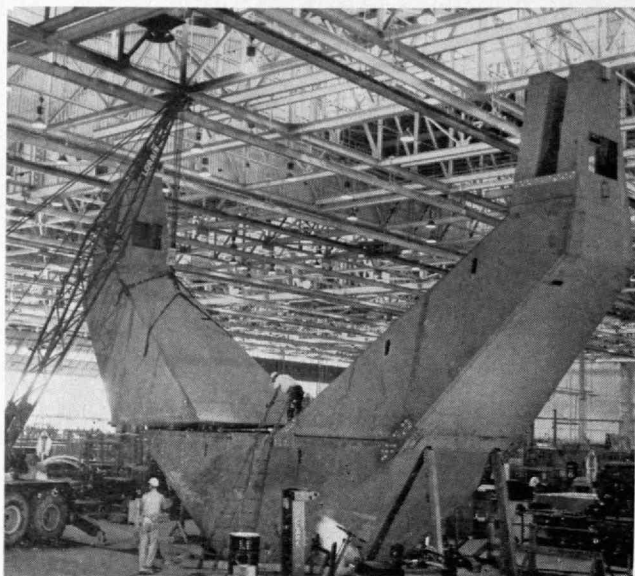
[†]Credit for recognizing this goes to Dr. J. E. Whitley of the Bowman Gray School of Medicine who spent several months with us under an NSF fellowship grant.



The growth of a plant is tracked continuously in one experiment performed (above) by Professor Lion's students. In another, the effect of a weight on a scale is seen (below) digitalized on a voltmeter.

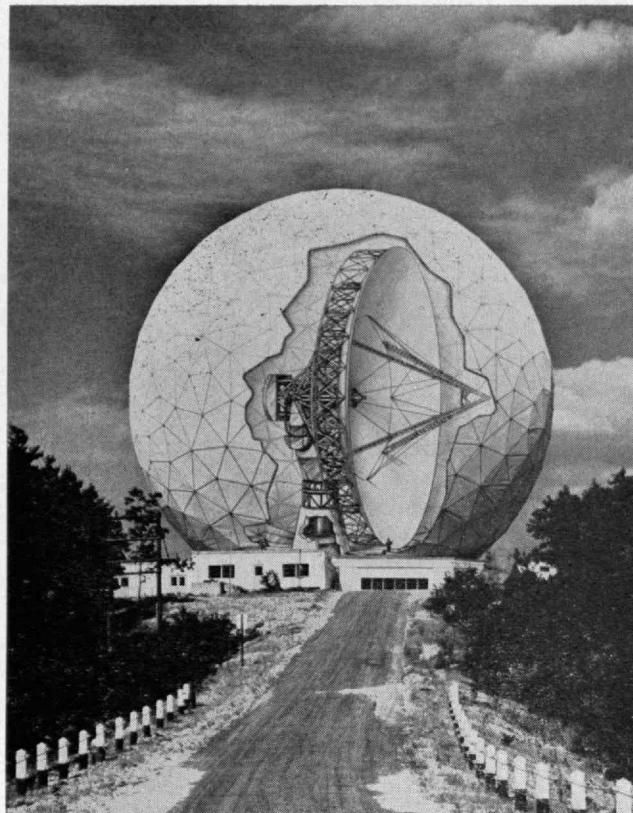


Haystack Radar's Parts Arrive



MAJOR STRUCTURES taking shape this spring to further M.I.T. men's work include the Air Force's Haystack communication and radar facility near Tyngsboro, Mass., adjacent to Lincoln Laboratory's Millstone Hill radar.

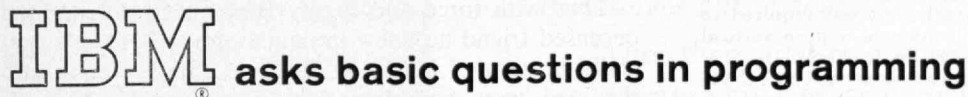
Its 120-foot-wide parabolic antenna will be supported by a Y-shaped yoke, shown above as it appeared on the floor of the North American Aviation plant in Columbus, Ohio, and—in the cutaway picture at the right—as it will stand when in use. It will rise about 50 feet above a 67,000-pound hydrostatic bearing assembly that is the largest of its kind ever machined, and the whole antenna will be inside a huge radome.



The bearing was shipped by truck through December blizzards, and the yoke was shipped by rail to Graniteville, Mass., in three pieces weighing over 20 tons each. These are shown below en route to the site on an icy day in January.

This \$10,000,000 installation is to be used for radar observations of other planets and as a ground terminal for both active and passive communication satellites. It is expected to be able to contact Mars, Mercury, and Jupiter, as well as reach Venus throughout most of that planet's orbit, and to be capable of tracking a target no bigger than a dime at a distance of 1,000 miles, when it is completed and put into operation.





Governed by a supervisory multiprogramming system, programs would cycle between memory and the drum storage, receiving a "slice" of processing time each time they reached the head of the queue. The supervisor would allocate memory space, maintain work schedules, assign vacated processing facilities, and monitor the interrupt system. By overlapping input-output operations and time-sharing the CPU, systems like this may make future computers more convenient to use as well as more efficient to operate. If you are interested in making important contributions in programming systems or other fields in which IBM scientists and engineers are finding answers to basic questions, write to: Manager of Employment, IBM Corporation, Department 615 D, 590 Madison Avenue, New York 22, New York. IBM is an Equal Opportunity Employer.

New Books

THE PROFESSOR AND THE PRIME MINISTER, by The Earl of Birkenhead (Houghton Mifflin, \$5.95), traces personal, scientific, and political events in the life of Frederick Alexander Lindemann, Lord Cherwell (April 5, 1886-July 3, 1957), and examines his relations with Winston Churchill and numerous other colleagues. Professor Richard H. Bolt is our reviewer.

"CHURCHILL COLLEGE might in some ways be regarded as a memorial to Cherwell rather than to Churchill," Birkenhead writes in this book, subtitled *The Official Life of Professor F. A. Lindemann, Viscount Cherwell*. The biographee "was the inspiration" of the "project to found a technological institute on the lines of the Massachusetts Institute of Technology, which he so much admired . . ." In his advocacy of updated technological education for Great Britain, "F.A." typically had "bombarded Churchill with minutes." Shortly before he died he witnessed the decision to build at Cambridge University the type of institute he long had urged.

Forty years earlier, working in World War I as a scientist at the Royal Aircraft Factory, Farnborough, this same F.A. had taken the mystery out of aircraft spin. Whereas previously a spinning aircraft was regarded as

doomed, Lindemann analyzed the dynamics, made instrumental measurements, prescribed the proper actions for a pilot to take, and himself first tested his theory in "a spin at 14,000 feet and brought it safely out—repeating the action first right, then left." In such words, 10 pages of careful, historical search document Lindemann's "immortal and perilous contributions to the scientific solution of spinning."

Another two dozen pages trace the role of Cherwell in the history of atomic energy in Great Britain, from his 1941 espousal of a committee report concerning the feasibility of a uranium bomb to the establishment of the Atomic Energy Authority in 1954. Its establishment "was won single handed by Cherwell . . . His name alone will be recognized by history as the true architect of the Atomic Energy Authority."

These events concerning technological education, aircraft spin, and atomic energy sample Lindemann's wide-ranging accomplishments. They spanned from 1910, when he published research papers on the physics of specific heats, to his last years, when he founded at Oxford the Research Laboratory for Archaeology and the History of Art.

The intervening half century of his career peaked notably in events surrounding World War II. Then, as a member of the Privy Council, as Paymaster General in the Cabinet, and above all—figuratively, but also literally in connection with science policy—as intimate adviser to Churchill, Lord Cherwell held political power probably unequaled by any other scientist in history.

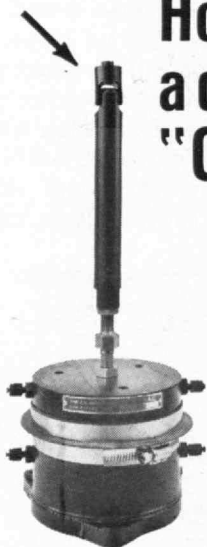
The book, also, peaks notably in the middle. Two hundred pages, some nostalgic, some loose-knit, some long, finally bring reward to the reader familiar with C. P. Snow's *Science and Government*. Here the story picks up with the phrase: "The charge . . . unworthily revived by Sir Charles Snow . . ." His account, we read, ". . . resembles a Victorian melodrama in which virtue in the form of Tizard is triumphant and the villain Lindemann hissed off the stage." And more, ". . . his conclusions are so ignorant and misleading to anyone who knew the dead victim as to approach caricature."

Thus with force and drama Birkenhead defends the deceased friend he knew intimately for 40 years. Especially in view of his rapid response (Snow's book and this one were copyrighted in successive years), this prominent English biographer merits commendation for a task conscientiously carried out. He quotes extensively from primary sources and lists nearly a hundred distinguished peers, scientists, and other colleagues who contributed information.

Curiously, although the author's aim is evident from the start, and although he wrote this book "at the request of Lord Cherwell's brother," the reader is not prepared for so vigorous a defense. Its impact is heightened enormously by the preceding, forthright exposition of Cherwell's weaknesses as well as his strengths. With apparent objectivity Birkenhead develops the vivid blacks and whites of personality and, in doing so, makes clear why Cherwell's acquaintances split into almost irreconcilable camps, his friends and his foes.

Birkenhead has not gone unanswered. In a 37-page appendix carried in a 1962 reprinting of *Science and* (Concluded on page 34)

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In a Frog's Eye

(Continued from page 23)

these layers. The first involved an operation. Partially repeating an experiment performed some years ago by R. Sperry, they severed the optic nerve of the frog. Three months later the half million fibers of the optic nerve had grown back and the frog could see again. Moreover, Lettvin and Maturana discovered that in growing back fibers sorted themselves out into their respective layers with unerring accuracy. Although this is what Sperry suggested and what Lettvin and Maturana have demonstrated, it still remains a mystery how each of the half million fibers finds its way back to the right layer and to just the right spot in that layer.

The second fact concerning the layers is equally remarkable. Lettvin and Maturana discovered that each layer in the frog's brain amounts to nothing less than a map of analyzed information from each detector type. They further discovered that these maps, placed one on top of the other, coincide perfectly. To borrow a phrase from lithogra-

The Weather On Venus

DATA from Mariner II released in February indicated that surface temperatures on Venus, below its cold, dense, high clouds, are on the order of 800 degrees F. and essentially as high on the planet's dark side as on its sunlit side.

Associate Professor Alan H. Barrett of the M.I.T. Research Laboratory of Electronics (in which the frog's eye has been studied among other things) was one of the scientists responsible for this unprecedented astronomical research.

phy, each map is in perfect register with the others.

This suggests that whenever a frog reacts to a given situation he is reacting, not on the basis of analyzed information contained in a single detector layer, but rather to information contained in each layer with respect to every other layer. Somehow, and very probably largely because the layers are in register, the frog can know in an instant what all four detectors have ab-

stracted from the world around them—and act accordingly.

The relationship between the possible configurations of the layers and their effect on the behavior of the frog is still unknown. But the frog's inherent ability to abstract in a direct fashion the essential features of his surroundings and to map those features in such a way as to tap all or any combination of them in a single instant is in no small way responsible for his survival.

Implications for Human Beings

The question of what the frog's eye tells the frog's brain is much nearer resolution thanks to the work of Lettvin and Maturana, and the implications go far beyond the world of *Rana pipiens*. That the frog is able to perform such complex abstractions upon the world around him is not a testimony to his intelligence, but rather to his stupidity. The frog, after all, is born with all the equipment he needs to survive. He has very little to learn. It is all built in. It is not too far-fetched, as a matter of fact, to view the frog as

(Concluded on page 38)

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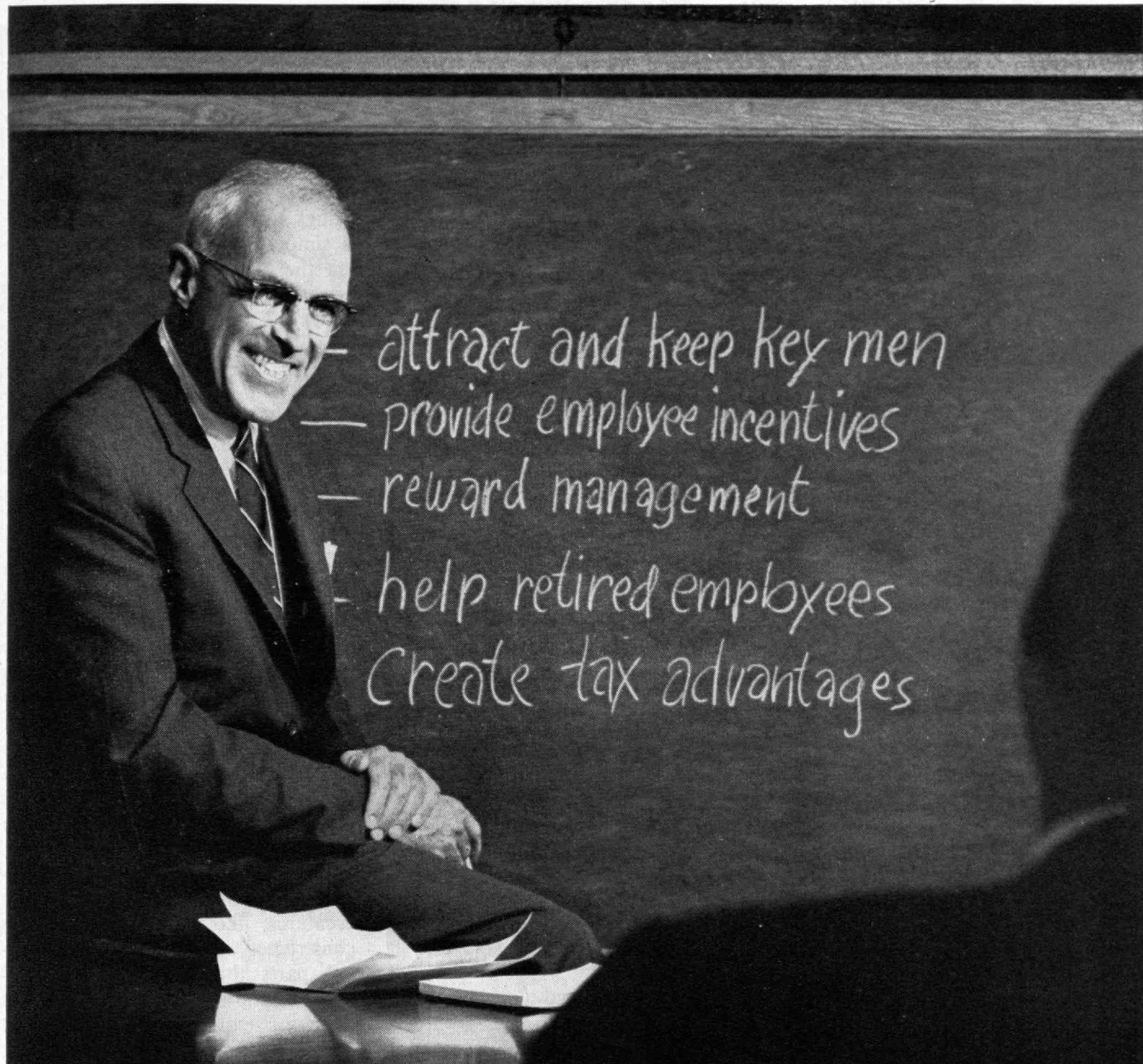
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In a Frog's Eye

(Concluded from page 36)

an extremely specialized computer that functions quite automatically to kill bugs and run from danger.

In view of this it is natural for us to ask, "How much of what human beings see is learned and how much is simply built in? Do we learn to see the world in three dimensions or can we not help but see the world that way?" An infant seems to recognize his mother's face by the time he is just a few months old. Does he *learn* to know a face from a window or a rattle, or can he not help but know because, as with the detectors of *Rana pipiens*, the ability to abstract the essential features of a face is built into him from birth?

Then there is the other side of the coin. The frog's visual world is fixed immutably in the categories set by his eyes. But in more complex creatures the autonomy of the peripheral organs—such as the eyes—is less evident. Thus if the optic nerve of the frog is cut, it grows back, but with human beings a cut optic nerve means blindness. Our eyes do not have autonomy and, perhaps as a consequence, we are far more versatile.

The work of Lettvin and Maturana has shown that in lower order creatures, like the frog, nature has constructed organisms with individual parts that function independently of one another. Their findings are consistent with the notion that in the higher orders, such as man, autonomy degenerates in favor of organisms whose parts are functionally interdependent. This strongly suggests an evolutionary trade-off of autonomy for interdependence which carried with it greater intelligence and versatility of the organism. If so, mankind enjoys the better part of nature's bargain.

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To Help Foreign Students

(Concluded from page 16)

showed that almost 7,200 individuals had been loaned better than \$7,250,000 of which more than one-half had been repaid. The assets of the fund at this period stood at \$4,275,000 and less than \$20,000 had been written off for all causes.

One of the operative policies of this fund from the start was to make *both* capital and income available for loans. The efficacy of this policy may be illustrated by comparing it to the usual procedure of using available income only and preserving the capital intact, as in scholarships. Assuming that the average annual earning is 5 per cent on a capital of \$1,500,000 for a period of 32 years, the gross income would amount to \$2,400,000; contrast this amount to \$7,250,000 loaned to 7,200 individuals (approximate average of \$1,000 to an individual). It is patent that three times as many students have been helped and furthermore the fund's assets have increased almost threefold.

It is a matter of record that student loans became nationally accepted by the U.S. Congress in 1958 with the enactment of the loan provision in the National Defense Education Act. Thus in a relatively short space of time an experiment at a privately endowed institution with student loans has become a national pattern in financing higher education for students by the use of public funds.

Demand and Supply

Most colleges and universities are continually hard pressed to meet the request for student aid (even with the National Defense loan available) and, moreover, of late there has been increasing demand for assisting foreign students, particularly from underdeveloped countries. There are foundations and similar organizations that grant fellowships and scholarships to foreign students but, as might be expected, the demand far exceeds the supply; hence colleges are importuned to step in and help. At this point it should be recalled that foreign students enjoy the same "hidden scholarship" that our own students do. It should be also kept in mind most scholarship endowments have some limitations in the use of their earned income; therefore, privately endowed institutions are going to experience genuine difficulties in supplying additional funds for this purpose.

From the experience with student loans in the United States, it is logical to propose that a revolving student loan fund be established on an international basis; i.e., a fund in both developed and underdeveloped foreign countries to help their nationals in financing their higher educational objectives. The establishment of a higher-education loan fund would give a certain amount of independence to the country and to the qualified young people. Such a fund might be subsidized by United Nation sources or possibly underwritten through the World Bank; however, the most important requirement should be that the student borrower repay the loan in his native land with its prevailing currency. The indirect benefits would be manifold, particularly in that the individual would have an appreciation of the increasing value of his education and of his obligation to participate in making these educational opportunities available for other qualified young countrymen in the future.



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Obtaining Water by Desalination

(Concluded from page 20)

water or salts across phase boundaries? A quantitative evaluation of thermodynamic losses in existing processes would focus research attention on the most important problems.

Basic research on nucleation and growth of crystals is needed to support the development of new and better freezing processes. Large crystals are needed if they are to be easily washed free of brine—what determines their growth rates? Study of hydrates which form at low pressures and at temperatures well above freezing has barely begun.

Both organic and inorganic membranes should be studied as possible materials for the reverse-osmosis process. Are hydrated ions literally filtered, or does water transport require the dissolving of water in the membrane substances? What is the importance of the ratio of amorphous to crystalline substance in polymeric materials? Should ion-repelling charged groups be incorporated in osmotic membranes? Though reverse-osmosis is a very old idea, research in the fundamental physics of osmosis has been neglected.

Biology has much to offer which is relevant to the water problem. What is the structure of natural membranes employed by plants and animals to control salt absorption? Perhaps synthetic membranes containing polypeptide chains might simulate nature and be better for osmosis. Nature employs ion pumps which, if understood, might suggest new approaches to the manufacture of membranes for electrodialysis. Natural photosynthetic desalination organisms may be able to guide us. Can algae or sea plants be used in a cyclic-staged de-

The Pops Will Return June 10

ALUMNI DAY at M.I.T. this year will be June 10, and will again be brought to a conclusion by Arthur Fiedler and the Boston Pops Orchestra in Kresge Auditorium. The day's program will include:

- The "inside story" of inertial navigation, a display of satellite hardware, a look at the new National Magnet Laboratory, and demonstrations of a man-computer team in engineering;
- A sit-in with undergraduates analyzing the work of a great poet, a case study of how music appreciation and understanding are developed, and an art exhibit of M.I.T. people's work.

There will be the usual luncheon in the Great Court, social hour on Briggs Field, and dinner in the Rockwell Cage.

salination process, employing the properties of such substances of absorbing water preferentially?

This brief review suggests the nature of the needed basic research, as contemplated by the National Academy conference. Much money and effort have been directed with considerable success to the development of existing desalination processes. But the law of diminishing returns is beginning to apply, and desalination costs are too high for most water users. The hope for inexpensive water in the future rests on the understanding of basic phenomena, which may be expected to come from a wide-ranging and imaginative program of fundamental scientific research.



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Individuals Noteworthy

(Concluded from page 6)

New Posts

NAMED in the news of promotions, elections, and appointments recently were:

Howard J. Williams, '20, as Vice-president, American Institute of Consulting Engineers . . . Henry Flynn, '23, as Vice-president, Supply and Distribution Department, Texaco Inc. . . . James R. Killian, Jr., '26, as a Director, American Telephone & Telegraph Company;

J. Robert Bonnar, '27, as Director of Industry Relations, General Aniline & Film Corporation . . . Leland E. Gibbs, '31, as Manager, Technical Service in Research and Development Center, Revere Copper and Brass, Inc. . . . Irwin M. Lord, '31, as a Director, Tubbs Cordage Company, San Francisco;

William J. Hallahan, '32, as an Associate, Fay, Spofford and Thorndike, Inc. . . . Robert G. Holt, '33, as Assistant Treasurer and Cashier, National Life Insurance Company . . . William L. Abramowitz, '35, as General Campaign Chairman, Jewish Community Federation, Lynn;

G. Peter Grant, Jr., '35, as General Manager, Office Copy Division, Nashua Corporation . . . Harry S. Stern, Jr., '37, as Group Vice-president—Operations, Indian Head Mills, Inc. . . . Stanley D. Zeman-sky, '37, as Vice-president—Administration, Kollsman Instrument Corporation;

A. Lindsay Thomson, '39, as a Director, Hartford Steam Boiler Inspection and Insurance Company . . . William A. Smith, '39, as Operating Engineer, Electric Depart-

ment, Public Service Electric and Gas Company, Newark . . . George C. Halstead, '40, as President, Alcoa Steamship Company, Inc.;

Lieutenant Colonel Stanley C. Skeiber, '40, as Chief, Research and Engineering Division, Springfield (Mass.) Armory . . . Stanley D. Stookey, '40, and James L. Knapp, '50, respectively, as Directors of Fundamental Chemical Research and of Administrative Services; Robert D. Maurer, '51, as Manager, Fundamental Physics Research, Corning Glass Works;

William K. Hooper, '41, as a Director, Bridgeport (Conn.) Chamber of Commerce . . . William M. Pease, '42, as President, Aracon Laboratories, Concord, Mass. . . . Edward R. Kane, '43, as Assistant General Director, Technical Divisions, Textile Fibers Department, E. I. du Pont de Nemours and Company, Inc.;

Edgar C. Ahlberg, '44, as Manager, Shoe and Graphic Arts Products Plant (Adams, Mass.), W. R. Grace & Company . . . Wendell C. Peacock, '44, as Senior Staff Scientist—Physics Research Planning, Spindletop Research Center, Lexington, Ky. . . . John F. Dimodica, '47, as Supervisor—Industrial Engineering, Strathmore Paper Company;

Ezra S. Krendel, '47, as Technical Director, Operations Research Division, Franklin Institute Laboratories . . . James W. MacLaren, '47, as President, James F. MacLaren, Limited . . . Richard H. Harris, '48, as Trustee, People's Savings Bank, Worcester;

Guilford L. Spencer, 2d, '48, as Chairman, Mathematics Department, Williams College . . . John E. Ertel, '50, as Plant Manager, The

Pantasote Company, Passaic . . . Markwick K. Smith, Jr., '51, as Research Vice-president, Geophysical Service Inc.;

Louis H. Benzeng, '52, as Vice-president and General Manager, G. C. Dewey Corporation, New York . . . Barnett B. Berliner, '52, as Consultant, "Farm" Project, Brookline Redevelopment Authority . . . Robert E. Dargie, '52, as Project Engineering Manager, American Optical Company;

William C. Menzies, Jr., '55, as Director of Research, Whittin Machine Works . . . Isadore Enger, '57, as Senior Research Scientist, Travelers Research Center, Inc.

Herbert Ritvo: 1915-1963

AN AUTHORITY on the Soviet Union, Herbert Ritvo, died in Boston in February while working in the M.I.T. Center for International Studies. Mr. Ritvo was a contributor to *The Technology Review*, and his review of a new book, *The Meaning of Communism*, appeared last month. Before coming to M.I.T. three years ago he was an Army Intelligence officer and worked with the State Department and Radio Free Europe.

Faculty Activities

PROFESSOR C. STARK DRAPER, '26, has been appointed to a new Commerce Technical Advisory Board by Secretary of Commerce Luther H. Hodges. . . . Professor Walter A. Rosenblith discussed "Computers and Brains" at a Georgia Institute of Technology symposium in February, and Professor William N. Locke participated in a tutorial session in New York on "Vistas in Information Handling."

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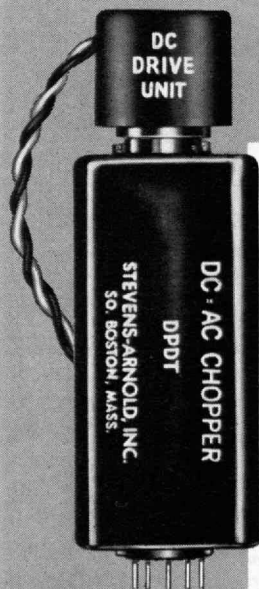
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Institute Yesteryears

(Concluded from page 26)

75 Years Ago

"THE PROVINCE of a college editorial," admitted the editor of *The Tech*, "seems to be generally that of finding fault. . . .

"During the past severe weather our exchanges have been filled with accounts of freezing classrooms and shivering students. Classes have had to be discontinued for days, in some instances, and . . . the agonized cry . . . for snug buildings, together with good ventilation and efficient heating apparatus finds its way into his college paper.

"We have been many times called upon to discuss the numerous disadvantages attending a student's life in a city college. The lack of class spirit, the isolated nature of our lives, etc., are all objections to an institution in a metropolis.

"But when spring shall come on apace, and the earth shall have assumed its beautiful green, the editor of the country college paper will, as usual, lay himself out on the attractions of his own particular institution, and of various advantages it, and all similar to it, possess over the dusty, noisy college of the city.

"Let us not forget then, when we are sighing for the freedom and quiet of which he boasts, that while he was giving his half-frozen attention to a chilling lecture, we were reveling in all the warmth and comfort of two of the best-heated and best-ventilated buildings in the land."

100 Years Ago

AT THE 10th Meeting of the "Government" of the Institute, President William Barton Rogers was able to announce officially that the guaranty fund of \$100,000 as stipulated in the Charter Act had been raised. This he could do because of a munificent gift made by Dr. William J. Walker, a former resident of Boston now living in Newport, R.I., through an instrument dated April 2, which read in part as follows:

" . . . do hereby give and grant to the Massachusetts Institute of Technology the proceeds in money of 600 shares in the Old Colony and Fall River Rail Road Company belonging to me, provided that there shall be subscribed, or pledged by persons of supposed responsibility on or before the tenth day of the present month of April, an amount of money for the benefit, use, and endowment of the aforesaid Institution which, when added to the sum hereby granted and given by me, shall together amount to not less than \$100,000 . . ."

At their market value, the 600 shares were considered worth not less than \$60,000, at which sum the gift of Dr. Walker was valued toward making up the guaranty fund of \$100,000.*

*Dr. Walker died in April, 1865, leaving "an immense fortune." After providing for certain relatives, he bequeathed one-quarter of the residue of his estate to the Institute—which received from the executors \$100,261 on Dec. 4, 1865; \$40,415 more by June, 1870; and an additional \$56,157 over the next 47 years. The final payment by the executors, which brought Dr. Walker's total benefactions to the Institute to over \$270,000, was a cheque for \$664.54 delivered on March 19, 1917.

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NAVAL OCEANOGRAPHIC OFFICE

—growing programs involving new developments, methods, techniques and equipment in oceanography, hydrography, gravity, magnetism, instrumentation, and related navigational science . . . including charts and publications. Was the Navy's Hydrographic Office.

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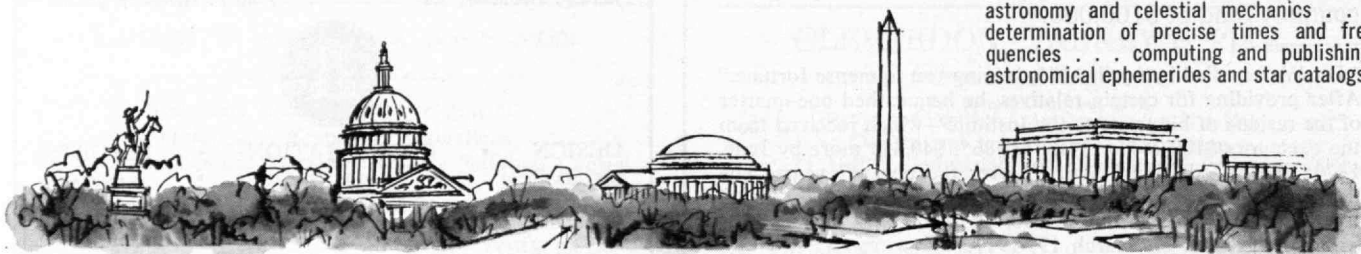
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Club News

Kansas City Alumni Host to C. S. Draper

The M.I.T. Club of Kansas City was honored by the presence of C. Stark Draper, '26, Head of the Department of Aeronautics and Astronautics, for meetings with the club and the Kansas City Chamber of Commerce, February 12 and 13, in recognition of National Engineers Week. The week was sponsored by the Missouri Society of Professional Engineers (MSPE), Western Chapter, with the co-operation of other engineering societies in this area.

Professor Draper described "Engineers in the Age of Space" to the capacity audience of 600. He emphasized the impetus of competing technologies on the international level, and the need for effective co-operation within industry and with government to secure the optimum benefits with minimum waste of talent.

Some 40 Kansas City Alumni and wives attended a dinner on February 12 in Professor Draper's honor. His extemporaneous comments to the club and answers to questions from the members were thoroughly enjoyed. His visit to Kansas City attracted considerable attention in the local news media.

The Western Chapter of MSPE heard in January, Brigadier General Robert F. Seedlock, '40, Division Engineer of the U.S. Army Corps of Engineers, who is stationed at Omaha. Before 200 professional engineers, General Seedlock diagrammed the work of the Corps in the Missouri River Basin. The concurrent benefits in flood protection and river navigation were emphasized by the General, who received his master's in civil engineering at M.I.T. after graduating from West Point. At the same meeting the Western Chapter, MSPE, proclaimed B. J. Kirkwood, '49, the Young Engineer of the Month. This award is made by the 900 member Chapter six times per year. —B. J. Kirkwood, '49, Secretary, 4308 West 79th Street, Prairie Village, Kansas.

Route 128 Club Topic Is M.I.T. Humanities

It frequently has been said that "engineers aren't well rounded" or conversely, that liberal arts students know little of the technical world in which we live. At a February 12 luncheon at the Lexington Inn, Route 128 Club members heard Roy Lamson, Professor of Humanities, describe Course XXI—M.I.T.'s new approach to providing a general education based on science or engineering.

Dr. C. Stark Draper, '26, was to speak at a meeting on March 28 on the Center for Space Research at M.I.T.—Robert E. Anslow, '54, Secretary, 82 Woodland Road, Lexington, Mass.

Future M.I.T. Club Meetings

Following are the dates and principal speakers as announced at the time of printing for M.I.T. Club meetings during April and May, 1963. For more details consult the club secretary in your city.

April 10—San Francisco—President Julius A. Stratton, '23

Reservations: Roger S. Borovoy, '56, Lippincott, Ralls, & Hendricson

April 11—Boston—General James McCormack, '37

Secretary: Warren W. Heimbach, '58, 120 Sylvan Street, Danvers

April 11—Los Angeles—President Julius A. Stratton, '23

Secretary: Arthur Schwartz, '47, 8355 Blackburn Avenue, Los Angeles 48

April 23—Seattle—Dean John E. Burchard, '23

Secretary: William J. Sullivan, Jr., '51, Boeing Airplane Company, Renton

April 25—Washington, D.C.—Program to be Announced

Secretary: Paul M. Robinson, Jr., 8009 Jansen Drive, Springfield, Va.

April 26—New York—Admiral William F. Raborn, Jr., USN; Dr. C. Stark Draper, '26; and President Julius A. Stratton, '23

Reservations: M.I.T. Club of New York, Biltmore Hotel

May 8—Hartford—Professor Nathaniel H. Frank, '23

Secretary: William A. Bayer, '58, 422 Farmington Avenue

May 9—Boston—Panel on Ethics in Business

Secretary: Warren W. Heimbach, '58, 120 Sylvan Street, Danvers

May 16—Rochester—Professor Roland B. Greeley

Secretary: John D. O'Brien, '51, Eastman Kodak Company

May 17—Long Island—Kurt Stehling, NASA

Secretary: Jimmie Chin, '56, 67-15 152nd Street, Flushing 67

Additions to this column of meeting announcements are welcome. Copy is due April 21 for the June issue of The Technology Review and should list your club meetings for June and July. Send your copy to: Alumni Secretary, M.I.T. Alumni Association, Room 1-280, Cambridge 39, Mass.

Hawaii Club Welcomes Environmental Engineer

Business and pleasure have brought together four M.I.T. men in an ideal setting for the practice of environmental and sanitary engineering—Honolulu, Hawaii. The men are Professor Emeritus William E. Stanley, Franklin Y. K. Sunn, '52, Albert Q. Y. Tom, '48, and Devere W. Ryckman, '56. All but the latter are in the consulting practice and are aiding the University of Hawaii in the development of the graduate program in environmental and sanitary engineering.

Dr. Ryckman, who recently accepted a nine-month appointment as visiting professor of environmental and sanitary engineering at the University of Hawaii and a consultant position on solid waste problems for the City and County of Honolulu, is from Washington University in St. Louis, Mo. While there he was an A. P. Greensfelder professor of engineering and director of sanitary engineering programs, and his colleagues included Nathan C. Burbank, Jr., '55, Henry D. Tomlinson, '55, Edward Edgerley, Jr., '54, and Rolf T. Skrinde, '52. Professor Ryckman's present position was created by the Committee on Public Health of the Honolulu Chamber of Commerce and the University of Hawaii with support from State, City, and County, as well as commercial and industrial interests. He will work with Fujio Matsuda, '52, of the Civil Engineering Department. The Ryckman family is living at 45155-A Ka Hanahou Circle, Kaneohe, Hawaii.

Joseph M. Buswell, '31, recently was been transferred to the Pacific Ocean Division of the U. S. Army Corps of Engineers in Honolulu and is now a club member. As a civil engineer, he is responsible for the civil works activities of the division. He was formerly with the Corps of Engineers in Seattle for 22 years. The Buswells make their home at 4236 Carnation Place, Honolulu.—Franklin Y. K. Sunn, '52, Secretary, 195 South King Street, Honolulu 13, Hawaii.

Japan Association Greets M.I.T. Visitors

The M.I.T. Association of Japan enjoyed an interesting meeting in honor of Martin J. Buerger, '24, Institute Professor, and Mrs. Buerger on February 16 at the Japan Industry Club of Tokyo. The meeting was enlivened by a report by William P. Mott, '3d, '60, who was on his way home with his wife after two years in Nigeria. Also welcomed were Mortimer I. Metzger, '39, presently working for the Asahi-Dow Company, and Mrs. Metzger.

Professor Secor D. Browne of the Department of Aeronautics and Astronautics was in town for a week early in February. Yoshinori Chatani, '22, gave a delicious Tempura party in his honor. Professor Browne was expected to return to Tokyo in March.—Shikao Ikehara, '28, President, Tokyo Institute of Technology, Oh-okayama, Meguro-Ku; Yokio Hori, '57, Secretary, University of Tokyo, Bumkyo-Ku, Tokyo, Japan.

Central Massachusetts Club Hears Robert W. Mann

Two dozen members and guests of the M.I.T. Club of Central Massachusetts met on January 30 at the Stockholm Restaurant, Worcester Municipal Airport, for dinner and to hear Robert W. Mann, '50, Chairman of Engineering Projects Laboratory and Head of the Design and Graphics Division of the M.I.T. Department of Mechanical Engineering.

Professor Mann presented a stimulating picture of today's mechanical engineer at M.I.T. and how his education and especially his laboratory training have undergone dynamic and progressive changes. Several slides were shown of undergraduates working on projects selected by both themselves and staff members. A round of questions was posed by club members. Guests included D. Hugh Darden, Director of the M.I.T. Educational Council, and Frederick G. Lehmann, '51, Secretary of the Alumni Association, who spoke briefly.

The club has scheduled a joint meeting on March 7 with the Harvard Business School Alumni Club of Worcester, with Jay W. Forrester, '45, Professor of Industrial Management, as the speaker on this occasion.

New officers for 1962-1963 are Arthur Lowery, '32, President; Charles Burnham, '43, and James E. Haggett, '47, Vice-presidents; Harry B. Duane, 3d, '57, Treasurer; and Arnold A. Kramer, '52, Secretary. Newcomers to Worcester are urged to contact the club secretary for information of future club activities.—Arnold A. Kramer, '52, Secretary, 88 Longfellow Road, Worcester 2, Mass.

Boston Alumni Review Nuclear Science Trends

Peter T. Demos, '51, director of the Laboratory for Nuclear Science at M.I.T., explained some of the exciting developments in his field at the February 14 luncheon of the M.I.T. Club of Boston at the Union Oyster House. Nuclear science has grown faster in its short life than any other body of knowledge. Public knowledge of the atomic nucleus was embryonic just 18 years ago when the first atomic bomb was dropped. The dynamic impact of this growth on education has fostered interdepartmental endeavors such as the Laboratory for Nuclear Science. The Laboratory is involved in use of M.I.T.'s nuclear particle accelerators as well as the new Cambridge Electron Accelerator and the high energy machines at the Brookhaven National Laboratory. It also has been in the forefront of satellite-borne experiments in cosmic ray research.

This talk on a significant part of the new frontier in science was of particular importance for those of us who have only slight contact with basic scientific research in our daily lives. Many of the new products developed in years to come will originate in places like the Laboratory for Nuclear Science.—Russell N. Cox, '49, President, 103 Loring Road, Weston; Warren W. Heimbach, '58, Secretary, 120 Sylvan Street, Danvers, Mass.

Washington Club Plans Urban Renewal Program

The M.I.T. Club of Washington will hold its annual meeting on April 25 at the Cosmos Club with a program emphasizing city planning and urban renewal. Officers will be elected at this meeting. In addition to the Executive Committee which functions as a nominating body, nominations were solicited in a February mailing to all alumni in the Washington Area.

Dr. Frances O. Kelsey, the woman medical officer of the U.S. Food and Drug Administration who refused to approve the marketing of thalidomide, was scheduled to speak on "The Investigation of New Drugs" at a February 28 meeting. Your secretary was event chairman.

On February 18, the Pentagon Lunch-club Group heard G. Griffith Johnson, Assistant Secretary of State for Economic Affairs. The program was arranged by Lieutenant Colonel James R. Cumberpatch, '60, president of the group.

The Alumni Association office has advised the club that Katherine D. Thulman Bristol has donated a sum to the Institute to establish the R. K. Thulman Student Aid Fund. Mrs. Bristol is the widow of Robert K. Thulman, '22. Friends of Bob Thulman may wish to make gifts to this fund. The club previously contributed a volume to the M.I.T. Libraries in his memory.

The club Executive Committee has nominated Robert W. Blake, '41, of Falls Church, Va., as its candidate to represent District 6 on the National Nominating Committee for the next three years. District 6 is composed of Virginia, West Virginia, the District of Columbia, Maryland, Delaware, and Pennsylvania. The retiring member is William B. Spencer, '15, of Baltimore, who is filling the unexpired term of the late William R. Ahrendt, '41, who was elected in 1960. Ballots must be received in Cambridge by April 25. The club had been advised that for this year's election only Alumni from Virginia could be nominated by this club.—Paul M. Robinson, Jr., 2-44, Secretary, 8009 Jansen Drive, Springfield, Va.

Long Island Is Site Of M.I.T.-Simmons Meeting

Over 100 M.I.T. and Simmons Alumni Club of Long Island members joined for a dinner and discussion meeting on January 18 at Patricia Murphy's restaurant in Manhasset. Lee Kappleman and Charles Stonier, respectively, Heads of the Planning Departments of Suffolk and Nassau Counties, explained their plans for handling the expanding populations and taxes of these two growing counties. During the question period which ensued, the officials were prodded by some who were not sure that "progress" is desirable. Their answer: Progress is inevitable!

Watch this column for further information about the annual club dinner in May and the father-son fishing trip in June.—Jimmie Chin, '56, Secretary, 67-15 152nd Street, Flushing 67, N.Y.

Northern California Club Hears D. P. Severance

Donald P. Severance, '38, Executive Vice-president of the M.I.T. Alumni Association, spoke to the Northern California Club on February 6 at the Engineer's Club of San Francisco. He explained recent changes in the Institute, and how these had been helped by the Alumni and Second Century Funds.

New officers for the year are: President, Lionel S. Galstauns, '34, Principal Engineer, Scientific and Nuclear Division, Bechtel Corporation; Vice-presidents, William D. McGuigan, '42, Assistant General Manager, Engineering, Stanford Research Institute; George M. Keller, '48, Chief Project Engineer, Engineering Department, Standard Oil of California; and Denman K. McNear, '48, Assistant Chief Mechanical Officer, Engineering Mechanical Department, Southern Pacific Company; Secretary-Treasurer, Roger S. Borovoy, '58, Patent Attorney, Lippincott, Ralls & Hendricson; Assistant Secretary-Treasurers, Leslie N. Reynolds, '55, Economic Analyst, Manufacturing Department, Standard Oil of California; and Alfred E. Castle, '40, Pacific Northern Sales Division Headquarters, Eastman Kodak Company.

Club plans for the year will be highlighted by a talk by President Julius A. Stratton, '23, to a joint M.I.T. Club-World Affairs Council meeting on April 10.

A tour to the United Air Lines maintenance base at San Francisco Airport is planned in June. William G. Mentzer, '31, has promised a return trip similar to the ones which were so successful two years ago. Teenagers are welcome and will surely enjoy the tour of the base.—Roger S. Borovoy, '58, Secretary-Treasurer, 535 Middlefield Road, Room 8, Palo Alto, Calif.

New York Club Prepares New Membership Directory

The New York Club Membership Directory, under the supervision of A. Stuart Powell, Jr., '49, is now available. The New York Athletic Club was the location of this year's traditional Beer Party. An annual meeting will be scheduled this spring.

Club members and graduates in the greater New York area who have been active in this year's Alumni Fund Drive for Westchester include: Alan W. Katzenstein, '42, Edward S. Selig, '52, J. Thomas Toohy, '49, and Francis C. Hyson, '52.

Among those attending the recent Silver Stein meeting were several members with "long-term" interest in the club: Thomas "Steve" Brophy, '16, president for five years; George Dandrow, '22, and Edward S. Goodridge, '33, also past presidents; Frederick G. Lehmann, '51, and Donald P. Severance, '38, respectively, Secretary and Executive Vice-president of the Alumni Association.—James M. Margolis, '52, Chairman, Publications, Publicity, 232 Madison Avenue, New York; Frank Brunetta, '49, Secretary, 1 Old Oak Court, Syosett, N.Y.

Class Reunions Being Held this June

- 1898: Reunion Chairman, Edward S. Chapin, 271 Dartmouth Street, Boston, Mass.; Burton House, M.I.T. Campus, June 7-10.
- 1903: For Information, John J. A. Nolan, 13 Linden Avenue, Somerville, Mass.; Everett Moore Baker House, M.I.T. Campus.
- 1908: Reunion Chairman, H. Leston Carter, 14 Roslyn Road, Waban 68, Mass.; Melrose Inn, Harwichport, Mass., June 7-9.
- 1913: Reunion Chairman, George P. Capen, 60 Everett Street, Canton, Mass.; Oyster Harbors Club, Osterville, Mass., June 7-9.
- 1915: Class Cocktail Party. Chairmen: Albert E. Sampson, 9 Thorndike Street, Beverly, Mass.; Barbara Thomas; M.I.T. Faculty Club, June 10, 4:00 P.M.
- 1916: Reunion Chairman, Ralph A. Fletcher, P.O. Box 71, West Chelmsford, Mass.; Oyster Harbors Club, Osterville, Mass., June 7-9.
- 1918: Reunion Chairman, Alan B. Sanger, 74 Old Army Road, Scarsdale, N.Y.; Wianno Club, Osterville, Mass., June 7-9.
- 1918: Reunion Chairman, Alan B. Sanger, 281 Garth Road, Scarsdale, N.Y.; Wianno Club, Osterville, Mass., June 7-9.
- 1923: Reunion Chairman, Howard F. Russell, Christian Hill, RFD 1, Milford, N.H.; Chatham Bars Inn, Chatham, Mass., June 7-9.
- 1928: Reunion Chairman, Arthur A. Nichols, 71 Sunset Road, Weston 93, Mass.; Wychmere Harbor Club, Harwichport, Mass., June 7-9.
- 1933: Reunion Chairman, Edward S. Goodridge, 23 Broadmoor Road, Scarsdale, N.Y.; The Nautilus Motel, Woods Hole, Mass., June 7-9.
- 1938: Reunion Chairman, Albert O. Wilson, Jr., 24 Bennington Road, Lexington 73, Mass.; Everett Moore Baker House, M.I.T. Campus, June 8-10.
- 1943: Reunion Chairman, Kenneth L. Warden, Jr., 10 Constitution Road, Lexington 73, Mass.; Mayflower Hotel, Manomet Point, Plymouth, Mass., June 7-9.
- 1948: Reunion Chairman, Kenneth S. Brock, 87 Adams Street, Medfield, Mass.; The Belmont, West Harwich, Mass., June 7-9.
- 1949: Class Cocktail Party. Chairman, George H. R. McQueen, Polaroid Corp., 730 Main St., Cambridge; Faculty Club, June 10, 4:30-6:15 P.M.
- 1953: Reunion Chairman, Paul P. Shepherd, 16 Scout Hill Lane, Reading, Mass.; Chatham Bars Inn, Chatham, Mass., June 7-9.
- 1958: Reunion Chairman, Cornelius Peterson, 4 Rambling Brook Road, Upper Saddle River, N.J.; Charter House Motor Inn, 5 Cambridge Parkway, Cambridge, Mass., June 7-9.
- Western Reunion: Chairman: Lewis H. Cohen, c/o Mrs. Antonia D. Schuman, Co-Chairman, 22400 Napa Street, Canoga Park, Calif.; Sheraton-Plaza, Hotel, San Francisco, Calif., June 15-16.

Delaware Valley Alumni Hear Professor Zacharias

The M.I.T. Club of Delaware Valley held its winter meeting on January 29 at the Barclay Hotel, Philadelphia. Jerrold R. Zacharias, Professor of Physics, spoke of his work on the Institute's Committee on Curriculum Content Planning and the effect it may have on future Tech alumni.

Donald P. Severance, '38, and Frederick G. Lehmann, '51, respectively, Executive Vice-president and Secretary of the Alumni Association, were guests. Don explained recent efforts of the Alumni Association and gave us a glimpse of some ideas for the future.

Newly elected officers are: C. William Hargens, 3d, '41, President; Herbert R. Moody, '41, First Vice-president; Robert G. Fisher, '44, Second Vice-president; Gilbert P. Monet, '43, Third Vice-president; John Murdock, '41, Secretary; Lee C. Eagleton, '44, Treasurer; and Joseph T. Lester, Jr., '44, Assistant Treasurer. Executive Committee Members include: John C. Melcher, '28; Edward S. Halfmann, '36; David E. Sunstein, '40; George S. Saulnier, '47; Charles L. Register, '50; Thomas V. Griffiths, '57; and Coleman Bess, '58.—Thomas V. Griffiths, '57, Secretary, Spring Valley Drive, Media, Pa.

Southern California Club Elects Officers for 1963-1964, Plans Dinner Meeting for President Stratton in April

Chancellor Francis Murphy of the University of California at Los Angeles discussed "A New Dimension of Foreign Relations" before 75 members and guests of the M.I.T. Club of Southern California on January 22 at the University Club.

Officers elected for 1963 are: President, Albert A. Livingston, '49; First Vice-president, Richard J. Steele, '46; Second Vice-president, John W. Barriger, 4th, '49; Treasurer, Martin R. Chetron, '56; Assistant Treasurer, William B. Hawe, '52; Secretary, Arthur Schwartz, '47; Assistant Secretary, Robbins H. Ritter, '37; Class Representatives, 1958-1962, Joseph Skenderian, '61; 1952-1957, George W. Bond, Jr., '57; 1948-1952, Charles M. Walker, '49; 1943-1947, unfilled; 1938-1942, Ray O. Wyland, Jr., '42; 1933-1937, Page E. Golsan, Jr., '34; Prior to 1927, Hiram E. Beebe, '10; Governors at Large, Robert Welles, '15, George M. Cunningham, '27; Richard S. DeWolfe, '36; James S. Cullison, '41; Raymond B. Stringfield, '15, and T. Gary Loomis, '44.

Donald P. Severance, '38, Executive Vice-president of the Alumni Association, was honored at a special luncheon meeting on February 7 at the University

Club. He described the many services performed by Alumni for M.I.T. and proposed greater co-ordination of the various Alumni efforts including particularly the Educational Council, Alumni Fund, and club operations. He also described the building made possible by SCF.

Club officers and directors, Educational Council members, and Alumni Fund representatives present at the meeting included: Phillip K. Bates, '24, James M. Chorak, '57, Ralph H. Lebow, '38, Samuel E. Lunden, '21, Francis O. Merchant, '33, Edward F. Schuman, '57, Phillip Schwartz, '23, Harold H. Strauss, '38, Harry C. Taylor, 2d, '54, Charles H. Toll, Jr., '23, Robert H. Wells, '18, Cleyon O. Yowell, '53, Hiram E. Beebe, Martin R. Chetron, James Cullison, Richard S. DeWolfe, T. Gary Loomis, Albert A. Livingston, Richard J. Steele, Raymond B. Springfield, and Arthur Schwartz.

A special April 11 dinner meeting in Los Angeles will honor President Julius A. Stratton, '23, who will be visiting the Los Angeles area.—Arthur Schwartz, '47, Secretary, 8355 Blackburn Avenue, Los Angeles 48, Calif.

Class News

'91

The following letter is from **F. Bradford Choate**, who lives with his wife, Rose, in his own house in San Mateo, Calif. His working life was spent with the western railroads; and he worked 50 years for the Union Pacific! "Dear Channing, I only wish I could sit down with you for a discussion. We have lived over a period which may not come to the United States again—an attractive period of raw nature and the advancement of science. My memory goes back to 1875 clearly. My father was offered Bell Telephone stock but refused it and put his money in an Arizona mine. Who knows what effect (his buying) it might have had on me. I might have been rich, which I never wanted to be, but enough of that. . . . Yes, I was very fond of the Union Pacific and my 50 years of service with it. I saw many changes and learned a great deal. . . . E. H. Harriman paid back the government \$43 million plus reasonable interest on the Union Pacific and Southern Pacific indebtedness. Some similar amount cleared the entire debt.

"Now as to your questions. Rose is much better. I am as usual. I can walk a mile but rarely do. I carry a cane to steady myself some days; I can balance better some days than others. I get short of breath easily, and my heart will give up some day; doctors will not say or don't know when I am prepared. I have lived, not a perfect life, but according to my lights. I drink but little now, as it is not good for me. We use a taxi to get downtown for shopping; we need very little to keep going; if I had somebody to drive a car for us, it would be much better. . . . My hearing? I got a Zenith hearing aid, and it is some help. I must get used to it; I need it. Lots of love from us both, Brad."—**W. Channing Brown**, Secretary, 15 Forest Ave., Hastings-on-Hudson, N.Y.

'95

All descendants of members of the Class of '95, M.I.T., we suggest that you write to us if you intend to take one or more subjects at M.I.T., so that we can assist you with benefits from our \$25,000 fund established at our 50th year reunion.—**Andrew D. Fuller**, Assistant Secretary, 120 Tremont Street, Boston, Mass.

'96

It would be interesting to hear from any classmate who attended the Fiesta in Mexico City or the first-Monday-of-

the-month luncheon of the New York Club at the Hotel Biltmore. Probably none of us has visited Havana; Americans are not as welcome as they were when General Wood was there and the fighting top of the "Maine" was still above water. Before **George Harkness** left for Orlando last fall, he suggested blockade of Cuban ports as a treatment for security. He writes: "bad frost—everything dead—trees may lose their leaves and be O.K. for next year." . . . **Myron Pierce** and I were to have lunch, but when I phoned his office in February, I learned that he had left the month before for Miami. **Herb Newell** too is keeping warm; he is comfortably situated in a modern apartment in Fresno near his son. He is in excellent health and still has most of his hair. . . . **Albert Ruckgaber** lives in Stapleton, N.Y., and manages to keep up with the times and is in fairly good health considering his 88 years; some of us may think we are keeping up with the times until some 8 or 10-year-old asks for help in arithmetic.

Harold Boardman and **Richard Elliot** are wintering in Maine. Elliot was 90 on February 6; he has passed his 10th driving test and drives his '62 Chevrolet and goes fishing in a Crestline outboard motor boat; he is content to tow his grandchildren and not compete with them in water-skiing. . . . **Walter Pennell** was for many years chief engineer for the Southwestern District of the Bell Telephone System. When he retired in 1938 he was living in St. Louis, where he was active in the life of the city; he returned to his native Exeter, N.H., where his two youngest children were born. Martha, B.S., Cornell, M.S., Brown, is now at M.I.T.'s Computation Center; among other things, she does much work on the "Brain Machines." Betty is a graduate of Simmons College and is now working in Berkeley, Calif. I wonder if she lives near Hyde! A visitor from Berkeley at the Skating Club of Boston lived on the same street as **Charlie**. . . . **Samuel Smetters** sends greetings to the class from Willmette, Ill. He was missed at the Alumni Luncheon last June; we hope to see him this year for our annual class meeting. . . . **Albert Spahr** is able to go driving every day during this real winter in the Berkshires and enjoys the beautiful countryside. In spite of having a broken hip three years ago, he is remarkably well.—**James M. Driscoll**, Secretary, 129 Walnut Street, Brookline, Mass.; **Henry R. Hedge**, Assistant Secretary, 105 Rockwood Street, Brookline, Mass.

'97

For the January notes, we were fortunate in getting news from several '97 members and unfortunate in losing our most loyal classmate, **Jere Daniell**, who slipped away December 26 after a long illness. Jere lived in Franklin, N.H., and an outline of his career will appear in next month's notes. . . . For other news, Fred Gilbert, '98, of Hemet, Calif., sent in a letter he received from **Alpheus Woodman**, with whom he had been

Sloan Senior Executives Fill New Posts

Promotions among graduates of the Program for Senior Executives include those of **Lamont L. Thompson**, Fall '61, who is now Sales Manager for Radio Station KPIX in San Francisco, Calif. . . . and **R. Blair Smith**, Fall '61, who has just been named Director of Market Development of the Data Processing Division of IBM. . . . **John R. McAllister**, Fall, '62, has been named Director of Purchases, RCA Staff, for the Radio Corporation of America. . . . **John Haivala**, Fall, '61, is now General Manager of the Bunker Hill Company in Kellogg, Idaho.

closely associated in chemistry in early M.I.T. days. It is not pleasant to think of Woodman having difficulties with locomotion, as he writes. He is, however, getting much pleasure hooking rugs, which he can do while seated. May we have another letter from you, Alpheus? . . . A letter from **Charlie Currier**, who has recently moved and now lives in Walpole, tells of his early move from engineering to finance. He seems to have been at B. F. Sturtevant, when it was in Jamaica Plain, at about the time that your class agent was a cub machinist there. At that time, Charles Greenlaw, '99, was also with the company. I correspond with him from time to time. He is a great advertiser of California's glorious climate. Last week's storm had not appeared at the time of his last letter.

Holiday cards have come from **Ed Hawkins**, **Charles Hammond** and **Pete Noble**. . . . A number of you who contributed two years ago to a small fund to make **Gus Lamb**'s widow more comfortable will be glad to hear that now at 85 and living alone at Amherst, she has passed the winter in comfort. Gus unfortunately did not believe in life insurance, so owning her house she is dependent almost wholly on Social Security and our '97 fund. **Jack Ilsley** acted as treasurer of the fund and left it in good hands with M.I.T. officials. I will try to get some details concerning it for a future report in The Review. Just now Uncle Sam and New York state tax matters take up all my amusement time. . . . No volunteer for '97 class secretary-treasurer has come forward. Without one, we cannot touch the class treasury and that class trip to Europe at the expense of the fund will again have to be postponed. Kindly volunteer, someone—**George R. Wadleigh**, Acting Secretary, 70 Flower Avenue, Hastings-on-Hudson, N.Y.

'99

The Class of '99 pays tribute to H. E. Lobdell, '17. His cordial smile and words of wisdom were an inspiration to our members and his advice on arrangements for our reunions was always appreciated. It is sad that his well earned rest after so many years of service to M.I.T. should be so suddenly terminated. . . . **William F. Hyde** died May 23, 1962, at the age of 86. He taught for some years in a high

school in Worcester, Mass., and had charge of the recreation department of that city; in Wheeling, W. Va., he worked as a welfare engineer for some large coal interests, improving the health and welfare services of the miners and their families. During World War I, he was procurement officer for a manufacturer in Wheeling who was building combat planes. After the war until his retirement in 1955 he was the representative of the Frigidaire Corporation in Chicago and Kansas City. A daughter of his first marriage, Mrs. Theodore S. Alexieff, lives in Providence, R.I. In 1929 William married Mrs. Nina King Hyde who writes that she was blessed by sharing his life for 33 years; he was a good man, an inspiration to all whose life he touched. . . . A notice of the death of **Albert F. Nathan**, X has been received without a date. Albert was a counselor-at-law in patents and trademarks.

Warren A. Priest, Box 125, Melvin Village, N.H., appreciates letters and news and especially visits from M.I.T. men. . . . **John A. Walls**, VI, Sheraton-Belvedere Hotel, Baltimore, Md., is taking an active interest in the advances in science and engineering especially in the fine courses given on television. Freed of administrative details, he can look back with pleasure on his contributions to hydro-electric engineering during his active life. After retirement it is delightful to be able to follow the research and modern developments in the many fields of knowledge to which one gives a passing glance but is unable to pursue during an active career.—**Percy W. Witherell**, Secretary, 1162 West Street, Wrentham, Mass.

Happy Birthday

Congratulations are due during April for an alumnus who will celebrate his 95th birthday; an alumnus who will have his 90th birthday; and 7 and 12 Alumni who will celebrate, respectively, their 85th and 80th birthdays, as listed below with dates of birth:

April, 1868—**FRED M. MCGRAW**, '86, on the 10th.

April, 1873—**WALTER J. MAYO**, '96, on the 18th.

April, 1878—**CHARLES S. GLENN**, '03, on the 4th; **EDMOND F. BRIGHAM**, '01, on the 13th; **WALTER R. KATTELLE**, '00, on the 16th; **CLIFFORD NORTON**, '00, on the 20th; **RUSSELL H. GLOVER**, '01, and **EDWARD J. STONE**, '02, on the 23rd; and **ALLEN T. GRIFFIN**, '01, on the 28th.

April, 1883—**KARL F. JUENGLING**, '06, on the 4th; **MALCOLM BRUCE**, '06, and **JOHN R. KIBBEY**, '08, on the 5th; **FRANCIS M. LOUD**, '09, **ROBERT S. PINKHAM**, '06, and **ARTHUR S. WEBSTER**, '04, on the 10th; **E. CARHART VAN SYCKEL**, '12, on the 15th; **HARRY C. KENDALL**, '05, on the 17th; **ALBERT C. ARMSTRONG**, '05, on the 20th; **JUNIUS P. LEWIS**, '12, **CHESTER N. MOORE**, '07, and **MARTIN S. TOD**, '10, on the 25th.

vestment Company. He served the nation on many important boards and commissions in World War II under appointments from Presidents Roosevelt and Truman. Among these were the Business Advisory Council of the U. S. Department of Commerce 1933-39, Chairman, 1936-39; Chairman, Industrial Advisory Board under N.R.A., 1934; President, American Paper and Pulp Association, 1942-43; Member, Committees on Industrial Analysis, 1937. He was a member of many clubs in Dayton, New York, Washington and Montreal. George married, in 1914, Elsie Louise Talbot. They had six children, three girls and three boys. His eldest son, Lieutenant George H. Mead, Jr., U.S. Marine Corps, was killed at Guadalcanal Island and posthumously awarded the Navy Cross.

We also mentioned in last month's Review, the death of **Theodore W. Brigham** on May 2, 1962. His daughter has kindly supplied us with interesting information of Ted's life. He was born in Baltimore, January 5, 1876. After graduating with us in 1900, he began his boatbuilding career in Greenport, Long Island, specializing in the construction of sailing vessels. He became a designer and superintendent of yard for the Greenport Basin and Construction Company and remained with the company all his active life, becoming an outstanding figure in the yachting world. During World War I he joined the Naval Reserve but on reporting at Newport for active service he was ordered to return to his regular occupation. During World War II his company was engaged in the production of mine sweepers for the U. S. Government. After the war it and its successor, Brigham's Shipyards, Inc., became the center on the eastern end of Long Island for the repair and maintenance of private yachts and commercial fishing boats. Ted retired in 1958. He was always active in local civic af-

fairs. He was a village trustee of Greenport; member of the Board of Education, serving on the Board when the present (modern) building was constructed; member of the Chamber of Commerce at various times; member of the Greenport Rotary Club; and for 28 years he served as clerk of the vestry of Holy Trinity Episcopal Church. In yachting circles he was honorary member and past commodore of the Shelter Island Yacht Club, charter member of the Southold Yacht Club, active member of the Chinese Yacht Club and chairman for several years of the Brooklyn Challenge Cup ocean races. Ted's wife, Edith, died in January, 1962, and his son Theodore W. Brigham, Jr., in 1950. Ted is survived by a daughter, Janet B. Adams of Rutherford, N.J., four grandchildren and one great-grandchild.

Robert H. Leach died January 26, 1963. He was a native of Brockton, Mass., where he was born March 30, 1878. After graduating from M.I.T. in 1900 from Course III, he engaged in mining work in Idaho, the Black Hills of South Dakota, Northern Michigan and Britannia Beach, B. C. He then became associated with Handy and Harmon of Bridgeport, Conn., dealers in precious metals in all forms for art and industry. There he became general manager and director of production and research, later becoming vice-chairman of the executive committee and technical consultant, remaining with that company until his retirement. He leaves his wife, the former Alice Holmes of Brockton and four daughters.—**Elbert G. Allen**, Secretary, 11 Richfield Road, West Newton 65, Mass.

'00

Last month in the Class News, we made the brief announcement of the death on January 1, 1963, of **George H. Mead**. Since then we have acquired a little more information about him. He was born in Dayton, Ohio, November 5, 1877. He graduated in 1897 from Hobart College, Geneva, N. Y. The following year he began his career in the paper industry in a mill founded in 1846 by his grandfather, Colonel Daniel E. Mead. In the fall of 1898 he came to M.I.T., joining our class and graduating with us in 1900 from Course X. After graduation he was for two years with the Cellulose Products Company of Boston. He then went with the Mead Paper Company of Chillicothe, Ohio, for a year, after which he was for two years general manager of the General Artificial Silk Company, Philadelphia, Pa. On November 1, 1905, he organized the Mead Pulp and Paper Company of Dayton, Ohio. He served as president of the company from 1912 to 1942, after which he became chairman and later, after his retirement in 1948, honorary chairman. He is said to have headed the corporation of 41 manufacturing operations in 17 states for more than 55 years. He was also president of the George H. Mead Company and Mead Sales Company and the Mead In-

'01

The Class Letter replies are beginning to come in. The first one is rather sad. A note came from Mrs. **Ralph H. Stearns** which said: "Ralph has had a number of strokes and of course will not be able to come to a reunion, nor is he able to communicate with anyone." She suggests that his name be taken from the class list, but as long as he is with us he will be considered a member of the class. . . . **E. H. Pendleton**, III, New Jersey: "Still working on the second supplement to the big 'Pendleton Genealogy' (published in 1911). Hope to get it out before long. It's all in type—about 500 pages." . . . Be sure and let **Willard W. Dow**, 78 Elm Street, Cohasset, Mass., know whether or not you would come to a reunion in June. This should be done immediately to allow time to make arrangements.—**Theodore H. Taft**, Secretary, Box 124, Jaffrey, N.H.

'03

Well classmates, the subject most prominent in our Class News is the 60th Reunion for our remaining members this coming June. . . . The classmates present at our 50th Reunion but now deceased

were Jim Cushman (President), Carlton Green (Treasurer), Ralph H. Howes, I, Emmor Millard, II, William Mitchell, VI, Edward Ruxton, II, Edward Chadbourne, I, Herman Ball, I. The remaining members still about and yet to be heard from are LeRoy Hunter, I, Paul Parker, XIII, George Wood, II, and George Garcelon, VI.

However, I have received a welcome response from Gus Eustis (treasurer), Ike Atwood (counsellor), Robert King, Stanley Foster, Jim Welsh, J. Tyrrell Cheney, Walter Regestein and Leroy Thwing, who reports that he has just published another story. . . . Your secretary has been chosen as chairman of our program, which is planned as simple and unorthodox in keeping with our mature disposition. We will enjoy the presence of classmates' wives and widows of our departed ones, as graced our 50th. The "esprit" among this latter group is very evident in their correspondence with the secretary. . . . Our reunion will be enlivened by the tour around the ever-enlarging campus at Cambridge and the four immense new buildings adjacent to M.I.T. in Technology Square. These structures are oriented toward a central plaza which will be completely landscaped. The main lobby level of individual buildings will contain shops, restaurants, and a bank. The first two buildings are nine stories in height and of duplicate design. The buildings are an expression of simple elegance in cast stone, contrasted with gray glass walls. The remaining two buildings in Technology Square are envisioned as a 20-story tower and a two-story display center or executive office building. . . . Our happy 85th birthday congratulations go out to **Frederick K. Lord**, who was born February 5, 1878.—**John J. A. Nolan**, Secretary, 13 Linden Avenue, Somerville, Mass.; **Augustus H. Eustis**, Treasurer, 131 State Street, Boston, Mass.

'04

Recently your secretary stood on the platform at the Huntington Avenue station of the Boston and Albany RR and beheld some of the destruction which is preceding the advance of the Massachusetts Turnpike from its present terminus at Weston into downtown Boston. The Technology Chambers apartments were a mass of rubble. The walls of the Old South armory where we drilled as freshmen, "dressed in our dinky uniforms so dapper and so neat," were about half way down and a start had been made on the Trinity Court apartments where some of you may have lived in student days. The passing of these old landmarks is making quite a change in the neighborhood of Tech on Boylston Street. . . The best view of the new Prudential tower is had from the steps in the great court of our present M.I.T. buildings.

The only class news is a report from The Review office that another classmate has gone. **Clark D. Simonds**, Course IX, died at Portland, Ore., December 21, 1962. He was born in Manchester, Vt.,

and had lived in Portland, since 1910. . . . As we get ready to go to press, the morning papers (February 15) announce the passing of **Cy Ferris**, a former vice-president of Stone and Webster. He was active in the civic affairs of Greater Boston. The once numerous Boston group of '04 Alumni thus loses another member and a good friend.—**Carl R. Hayward**, Secretary, Room 35-304, M.I.T., Cambridge 39, Mass.; **Eugene H. Russell, Jr.**, Treasurer, 82 Devonshire Street, Boston, Mass.

'05

Future '05 reunions on Alumni Day will never be the same, for **Frank Chesterman**, VI, passed away suddenly in Philadelphia on January 21, 1963. I am indebted to Sid Caine, Merrill Bartlett, Roy Walker and Franklin Osborn, '11, for clippings from Philadelphia papers giving an obituary. From these I have compiled the following: "Francis J. Chesterman, retired president of the Bell Telephone Company of Pennsylvania and a civic leader, died suddenly last night. He was 79. Mr. Chesterman collapsed shortly before 7 in the lobby of the Rittenhouse Claridge Hotel. Members of Rescue 7 administered oxygen and took him to Graduate Hospital where he was pronounced dead. A spokesman for the Medical Examiner's office said Mr. Chesterman had been under a physician's care for arthritis and a heart condition. His home was at the Cambridge Apartments, Germantown. The retired executive was a native of Taunton, Mass. He was associated with the Bell System from 1905 until his retirement in 1949. From 1947 he was president of the Bell Telephone Company of Pennsylvania, having previously served as a director and vice-president of Western Area operations.

"Mr. Chesterman served on the

boards of Fidelity-Philadelphia Trust Company, National Vulcanized Fibre Company of Wilmington, Del., and Chesterman-Leeland Company of Philadelphia. For many years Mr. Chesterman played a prominent role in the civic and humanitarian affairs of Philadelphia and the Commonwealth. In the early 1950's he served as chairman of the "Little Hoover" Commission, appointed to study reorganization of the state government with an eye toward possible economies. From 1950 to 1954 Mr. Chesterman served as chairman of the Philadelphia Parking Authority, seeking remedies for mid-city traffic problems. He also served as a director of the Philadelphia Chamber of Commerce, Board of Trade and Philadelphia Navy League Council. He was a president of the Public Charities Association, and vice-president of the Philadelphia Council of Boy Scouts of America. He served as chairman of the State Government Survey Commission, appointed to study reorganization of governmental operations.

"Mr. Chesterman was senior warden at Holy Trinity Episcopal Church and vice-president of the Philadelphia Divinity School. In addition, he was a member of the Bishop's Standing Committee of the Protestant Episcopal Church, Diocese of Pennsylvania.

"Mr. Chesterman's first wife, the former Mary Healey, died in 1951. In 1953 he married May Fegley White, widow of Clarence B. White. Besides his wife, Mr. Chesterman is survived by a daughter, Mrs. Ira Deitrick of Bronxville, N.Y., a son, John F., of Red Bank, N. J., two sisters and five grandchildren." A graveside service was held at the Oak Hill Cemetery, Newburyport. I expected to attend, but a series of snowstorms prevented my doing so. However, Frank's old buddy, **Harry Charlesworth**, drove up from South Orange to attend. In Harry's words: "I was so glad I could be there, not only for myself, but with the feeling that I was, in a way, representing

Deceased

GEORGE S. BARROWS, '93, Dec. 14
EDWARD PAGE, '93, Jan. 4
ARTHUR S. PEVEAR, '93, Jan. 28
CHARLES F. EVELETH, '95
LEROY H. BYAM, '98, June 17
DANIEL W. EDGERLY, '98, Jan. 23
EDGAR W. NORTON, '98, Sept. 4
WILLIAM F. HYDE, '99, May 23*
ALBERT F. NATHAN, '99*
ROBERT H. LEACH, '00, Jan. 26*
JOHN F. HECKMAN, '03,
CYRUS Y. FERRIS, '04, Feb. 13*
CLARK D. SIMONDS, '04, Dec. 21*
FRANCIS J. CHESTERMAN, '05, Jan. 21*
WILLIAM H. CROWELL, '05
ARTHUR M. WINSLOW, '06, Dec. 23*
DONALD C. BOLLARD, '07, April*
FRANCIS H. MCGUIGAN, Jr., '08, Jan. 24*
JESSE E. JAMES, '10, 1962
THOMAS H. HAINES, '11, Jan. 15*
RICHARD P. WALLIS, '12, Aug. 31
LEVITT L. CUSTER, '13, Aug. 30*
FREDERICK D. MURDOCK, '13, Dec. 13*
EDWARD R. NORTON, '13, Dec. 25
RALPH S. RANKIN, '13, Jan. 4, 1962

CLYDE C. MACKENZIE, '15, May 15
WILLIAM S. CHANDLER, '16, Dec. 19*
ERNEST C. GAGNON, '16, April 13*
WALTER B. LITTLEFIELD, '16, Dec. 30*
MRS. SIDNEY S. ROBINS, '16, Dec. 22
FREDERICK W. WHITE, JR., '18, Dec. 27*
MASON S. NOYES, '19, Sept. 26*
CHARLES H. CUSHMAN, '22, Nov. 7*
WILLIAM F. DRISCOLL, '22, Sept. 10
LAURENCE W. KENDRICK, '22, Dec.*
PAUL M. PHILLIPS, '22, Jan. 11*
MALCOLM K. SHEPPARD, '22, June*
ROBERT A. BROWN, '23, Jan. 13*
WALTON T. DAVIS, '23, Dec.*
ANATOLE R. GRUEHR, '24, Jan. 17*
AUGUSTUS B. RUDD, JR., '24, Feb. 9*
FRANCIS D. MCKEON, '26, Dec. 20
GEORGE N. FAIRBANKS, '27, Dec. 25*
JOHN A. GRANT, '28, Dec. 8*
TEUNIS SCHENCK, '28, Aug. 2
GEORGE E. CARTER, JR., '31*
EDWARD C. FORBES, '41, Dec. 13
WALTER H. HILDEBRAND, JR., Dec. 23*
FRANK B. CUFF, JR., '51, Jan. 15
JOSEPH E. ROSE, '58, Nov. 12

*Further information in Class News.

all his friends in '05." What a pal. Thanks, Harry.

Poring through the Faculty Section in the 1961 Register, I noted the name of Professor Edward N. Lorenz, '43. Through the Alumni Office I discovered that he is the son of our Edward H. . . . In referring again to some of my Christmas cards I discovered a very unique and appropriate gadget—a two-pronged can opener with an umbrella arranged to prevent the champagne (or something) from squirting up my sleeve. Percy's well-known imagination is still active. . . . I am especially honored with an autographed copy of Charlie Smart's new book, "The Makers of Surveying Instruments in America Since 1700." It shows an immense amount of research. It gives the history of surveying instrument manufacturers from William Ainsworth (1880) to Buff and Buff (1898) to William Wurdemann (1811). It is from the Regal Art Press, Troy, N.Y. You may purchase a copy by writing to Charlie. Incidentally, there were a few other '05 men who had confided to me that they were writing a book. How about it, Joe Daniels, Lloyd Buell, Fred Poole, Bob Beard, etc.?—**Fred W. Goldthwait**, Secretary, Box 32, Center Sandwich, N. H.; **Gilbert S. Tower**, Assistant Secretary, 35 North Main Street, Cohasset, Mass.

'06

Having neglected to mention it before, I should report that Mrs. **Terrell Bartlett** replied to my note of sympathy with a long letter from which here are a few quotes: "I am fortunate in having a large number of relatives and old friends here in San Antonio. They have done much for me. One of my nieces has come to live with me; we are congenial, so it is a fine arrangement. I have been distressed over the news of Mr. Lobdell's death. He and his wife have been close friends of ours. I feel badly at being unable to send any message of sympathy, for both Lobbie and Conchita have been dear to us." Fortunately, in my reply, I was able to give Elizabeth a Monterrey address by which she might reach Conchita. . . . We heard from Mary and **Harry Fletcher** who were still in Philly in February. No word then from Florida and by April all the '06 visitors will probably be on their way, or at, home—perhaps making plans for a New England visit around Alumni Day on June 10. Structurally speaking, the campus is going Great Guns. . . . Which reminds me that **George Guernsey**, I, and I browsed around the campus on January 28 ending up watching the Tech Swim Team practice in the Alumni Pool. From our comfortable seats in the gallery we had a birdseye view of their sprints and different strokes—crawl, overhand, breast, back, etc.—and then distance and some fancy diving. George was a guest at the council meeting that evening, (**Sherm Chase** was probably away) with a very interesting and informative talk by Dr. Killian about what eventually developed from the letter sent to him by Professor Zacharias a few

years ago. A couple weeks later George and Elsie left Wellesley for Florida by auto to spend the rest of the winter.

A few of our class became teachers, among them **Arthur Melvin Winslow**, I, who died at home in Seattle on December 23, 1962. Professor Winslow was born in Providence, R.I., April 24, 1882, prepared at Classical High School there, and obtained his S.B. at Brown in 1905. He was with us only senior year as a graduate student, was a member of the C.E. Society, and his thesis was "Tests on Reinforced Concrete Tee Beams." For a few years after graduating he was with the Eastern Bridge and Structural Company of Worcester, Mass., but by or before 1915 started his lifework as assistant professor of civil engineering at the University of Idaho in Moscow, Idaho. In 1918 he moved farther west, to the University of Washington in Seattle, becoming professor of mechanical engineering and in 1952, Professor Emeritus, having lived at the same address on 18th Avenue for over 42 years. At the time of our 50th Reunion Professor Winslow wrote to Jim as follows: "First let me express appreciation of all your earnest efforts in arranging the class reunion. I have been in the Northwest for years and have not been in Cambridge since 1934. My son, Russell, however, now with Boeing Airplane Company here, graduated in Course II, 1941. Together with the enclosed payment of class dues toward a successful reunion, I wish to send greetings and good wishes to classmates of 1906." During the construction of the Hotel Olympic and the Diablo Dam, Professor Winslow was a consultant; he was an honorary life member of the American Society of Chemical Engineers, a member of Phi Beta Kappa scholastic honorary; or Sigma Xi science-research honorary; of Tau Beta Pi engineering honorary. Survivors are his wife, Helen; sons Russell, E. of Seattle and Robert M. of Anchorage; a daughter, Mrs. Terrence Carroll of Honolulu, and nine grandchildren. A letter of sympathy has been sent to the widow.—**Edward B. Rowe**, Secretary-Treasurer, 11 Cushing Road, Wellesley Hills 81, Mass.

'07

In the leaflet, "M.I.T. Alumni make News 1962" which was sent to all the alumni, under the heading of "General Intelligence," there was the following statement: "At last June's 55th Reunion of the Class of 1907, classmate **Arthur O. Christensen** and his grandson gave an exhibition of water skiing." Pictures of this event were shown in the November 1962, Review. . . . **Carl R. Bragdon**, X, sent me information about **Roy W. Lindsay**, which will interest all our '07 members. We missed Roy very much at our 55th Reunion last June. For a number of reunions, he has headed up the golf tournament. The information was from the January, 1963, magazine P.V.P. (Paint and Varnish Production). The front cover of this number carried a fine three-quarter length portrait of Roy holding a

sketch of the new Pratt and Lambert plant to be opened this coming April in Los Angeles. The article about Roy was entitled "The Paint Industry's Future is the Man with the Test Tube." I quote from the article: "Roy W. Lindsay, President of Pratt and Lambert-Inc., is a chemist at heart, and believes that the future of the paint industry lies in the capable hands of the person who played a key role in bringing it today's success—the man with the test tube."

"When I came into the industry we chemists were a very minor factor with little influence and considered by most companies as window dressing," observes Mr. Lindsay. "Today, the reverse is true," he continued, "a strong, aggressive and talented technical department is the best insurance a paint company can have for future security. The success of the paint industry can be attributed to the ingenuity of our forward looking 'man with the test tube' coupled with the enterprising and pioneering spirit of management."

The article contained a boxed summary of Roy's activities since graduation with Pratt and Lambert: "Roy W. Lindsay, President of Pratt and Lambert-Inc. since 1952, joined P & L in 1908 shortly after graduating from Massachusetts Institute of Technology as a chemical engineer. He has served successively as chief chemist, manager of industrial sales, assistant treasurer and general sales manager. Named to the board of directors in 1927, he was appointed treasurer in 1928 and was elected a vice-president in 1930. His long service to P & L and the industry in general has brought him many honors and assignments in trade organizations. He is a former regional vice-president and director of the National Paint, Varnish and Lacquer Association and vice-president and director of the Canadian Paint, Varnish and Lacquer Association. This past September Mr. Lindsay served as honorary chairman at the Canadian group's golden anniversary program in Toronto. He is also a past president of the Buffalo Paint, Varnish and Lacquer Association."

The drive for the M.I.T. Alumni Fund for 1963 is under way. All '07 men received Don's January letter as our class agent. If at all possible, I urge each '07 member to make a gift to this fund. Only those still paying on a pledge to the Second Century Fund can be excused from answering this 1963 appeal. . . . The Alumni office sent notice of the death in April, 1962, of Donald C. Bollard, IV, 18 West 68th Terrace, Kansas City, Mo. He was carried in our class file as a non-associate. Can anyone furnish me with any facts about him, his family, or his business associates?—**Philip B. Walker**, Secretary and Treasurer, 18 Summit Street, Whitinsville, Mass.; **Gardner S. Gould**, Assistant Secretary, 409 Highland Street, Newtonville, Mass.

'08

Next June we celebrate our 55th Reunion. It will be held at the Melrose Inn, Harwichport, Mass., on the Cape, June

7-9. Headquarters will be in the Beach House as in the past. This will be our seventh visit with the Smiths, so we should feel at home. Monday, June 10 is Alumni Day at Cambridge. I understand great things are planned, and it will be a fitting climax for our 55th. Plan now to be with us June 7-10. Ladies are invited. . . . How about the Alumni Fund? Have you made your gift yet? If not, please do, and soon. '08 has always done well in the past so let us keep it up. . . . I had a nice visit with **Jimmie Burch**, who was in Boston February 1. He had been taking in the various bank meetings in New York and caught the 'Merchants' for Boston, and telephoned me about 10 P.M. on arrival. He suggested meeting for breakfast, but I thought lunch would be better. I met him at the Statler at about 11 A.M., and we gossiped until lunch time. We then had lunch at the Faculty Club. Jimmie is looking forward to our 55th at Harwichport.

We are very sorry to report the death on January 24, 1963, of **Francis H. McGuigan, Jr.**, at his home in Montclair, N.J. "Spike," as he was known, was very active in class affairs during undergraduate days and was president of our freshman class. **Leo Loeb** sent me the following clipping from a Newark, N.J., paper: "Funeral services for Francis H. McGuigan, Jr., retired Prudential Insurance Company executive, will be today at the Arthur K. Brown Funeral Home, 56 Park Street, Montclair. . . . Mr. McGuigan, who lived at Roosevelt Place, Montclair, died Thursday. He was 77. Born in Chillicothe, Mo., Mr. McGuigan lived in Montreal, Chicago and Houston before going to Montclair 35 years ago. He began his career with the Grand Trunk Railway and was regional engineer heading railroad operations at Chicago during World War I. He later was an executive for the Missouri Pacific Railroad before joining Prudential in 1927. He retired in 1950 as an executive in the bond department. He leaves his wife, Mrs. Marie Aline Mixer McGuigan; a son, Frank H., 3d, of St. Louis; two daughters, Mrs. William Grier Maryin of Towson, Md., and Mrs. Clyde E. Cooke of Elizabeth, and eight grandchildren.—**H. Leston Carter**, Secretary, 14 Roslyn Road, Waban 68, Mass.; **Joseph W. Wattles**, 3d, Treasurer, 26 Bulard Road, Weston 93, Mass.

'09

At the time that these notes were sent to the Alumni Office February 14, we had also just sent to Fred Lehmann, '51, now taking Don Severance's ('38) place as secretary of the Alumni Association, the copy of the letter together with a return postcard describing the efforts of the 55th Reunion Committee to choose a suitable meeting place. Undoubtedly, everyone has now received the material and has replied. The committee in making its choice will, of course, be guided by the replies which are received. In the next Review we will report on these replies and any further information concerning

the plans for the reunion. . . . Probably the members of the class have learned that Don is now executive vice-president of the Alumni Association, taking the place of H. E. Lobdell (Lobby), '17, who retired and who later died on January 1. The class officers can attest to the high degree of interest and co-operation which Don always accords them in their conduct of class activities. . . . **Molly**, XI, has just reappointed **Art Shaw**, I, the 1909 representative on the Alumni Council for another five-year term, his last term having just expired. Art was first appointed as our representative in 1927 so that he has been representing us for 36 years, a long period. He has sent us a card from their winter residence at Gulf Ranch, Longboat Key, Fla., stating that both he and Betty were enjoying the warm climate and sea bathing. This year they left their Auburndale home the middle of December, about a month earlier than usual.

We have also received a card from **George Wallis**, II, from his usual winter resort On-The-Waterway, Pompano Beach, Fla. The card shows in color Pompano Chateau, a "delightful year-round apartment" with a roof-top sun-deck and below a fresh-water swimming pool just outside the patio. George and Marcia left Wenham in January, we believe, and he reported: "we had a fine trip down, good weather except the first day." He also sent his approval of the proposed notice of the 55th reunion, the final copy of which most of you have already received. . . . **Francis Loud**, VI, our assistant secretary, left home December 20th, stopped in Chicago a couple of days, and then went on to San Diego where he had a very pleasant Christmas with his sister who lives there and with his brother and sister-in-law who came from Florida to spend the holidays. Francis plans to return to Weymouth, Mass., about March 1. . . . In the February Review we told of the death of "**Tug**" **Wilson** and stated that on behalf of the class, we had conveyed our sympathy to Mrs. Wilson. She has since replied, expressing her appreciation of the note which we sent as well as the thoughtfulness of the class.—**Chester L. Dawes**, Secretary, Pierce Hall, Harvard University, Cambridge 38, Mass.; Assistant Secretaries: **George E. Wallis**, Wenham, Mass.; **Francis M. Loud**, 351 Commercial Street, Weymouth 88, Mass.

'10

I had the pleasure of sitting with **Hal Manson** at the January Meeting of the Alumni Council. Hal is in good health and enjoying himself but he does miss his daily round of golf during the New England winters. . . . **George P. Lunt** is on his way to Florida and Sea Island for a month or more starting February 24. . . . **Harold D. Billings** finds the winter weather such that he seldom goes to his office but expects to be more active when spring comes. . . . **Carl Lovejoy** has responded to my plea for news of classmates with the following letter: "In re-

sponse to your plea for more letters, I add my two cents worth. I find it hard to believe it is just six years since I retired. To those who ask "What do you do when you retire?" I reply, "Either stay where you have friends, or go where you have friends." We enjoy our life in Florida, because we have 10 couples within a half hour drive, all of whom we knew in New England or Ohio for many years.

"I am not in touch with any M.I.T. men in Florida. I did send an item to a nonsense column in the Miami paper and several people wrote me. One was a Harold A. Smith who was in 1910 but got his degree in 1911. The item was inspired by Bruce Greenland of the New England Division of the Corps of Engineers. He used to drive to Greenland, N.H., to mail his Christmas cards. I sent mine to Lovejoy, Ga., to have them postmarked with my name. . . . Sorry I did not make the 50 year reunion. I did take in the 30th and 40th. Will try for the 60th if my health is as good as it is and has been." . . . As for myself, I am planning to attend the M.I.T. Mexico City Club Fiesta early in March. I am going with my partner, Waldo F. Pike, '15. We both will have a fine time as I attended the Fiesta in 1954 and I had a wonderful time.—**Herbert S. Cleverdon**, Secretary, 120 Tremont Street, Boston, Mass.

'11

Thomas H. Haines, II, a former vice-president of the Boston Edison Company, died January 15, at his home, 107 South Avenue, Weston, Mass. After graduation from M.I.T. in 1911, he spent two years as an assistant instructor in the steam engineering laboratory of the Institute. He joined the Boston Edison Company in 1913 and retired in 1954. He had been associate director of engineering, steam and electric operations, and also served as superintendent of the transmission and distribution department. After retirement he did some private consultations. He is survived by his wife, Mildred, two daughters, a sister, and three grandchildren. . . . The following quotations are from a postcard received from Alvin Manzanilla, '31, Cuernavaca, Mexico. He is the president of the M.I.T. Club of Mexico: "Here we are sitting in a garden full of bougainvillea, poinsettias, and balsam, all in bloom. And we are thinking of our friends who, in March, will be joining us for the Fiesta."

A report was received from the M.I.T. Alumni Fund Director Henry B. Kane, '24, and the following is a partial quotation: "In 1960 the Class of 1911 established the **Orville B. Denison** Memorial Fund with an initial gift of more than \$17,000, and during the year it was increased to \$30,729. In the year 1962 an additional gift of almost an equal amount was made, and on June 30, 1962, the capital of the fund stood at \$60,800.06, the income to be used for grants to undergraduates. At present scholarship grants have been made to nine undergraduates, totaling \$6,450. The class is to

be congratulated on its action in establishing this fund to aid needy students in Dennie's name. He would have liked that." . . . Address change: **Frederick L. Woodlock, II**, from Cochrane, Mass., to 395 Maple Avenue, Cheshire, Conn.—**Henry F. Dolliver**, Secretary, 10 Bellevue Road, Belmont 78, Mass.; **John A. Herlihy**, Assistant Secretary and Treasurer, 588 Riverside Avenue, Medford 55, Mass.

'12

Word has just been received of the death of **Richard P. Wallis**. Dick was active up to the time of his death with Bliss Management Company, Cleveland, Ohio. . . . Dr. **John P. Minton** is now located at 206 Country Club Park, Grand Junction, Colo. . . . **Cyrus F. Springall** is now located at 100 Sunset Rock Road, Andover, Mass. Cy has recovered wonderfully from his severe illness of over a year ago and would like to hear from any of his old friends. . . . **Julius M. Rosenberg** writes from 9160 West Bay Harbor Drive, Miami Beach 54, Fla., where he is spending the winter. After graduation he spent a year as a bacteriologist in Providence, and later was with Professor Phelps at the Institute. In 1916 he located in Detroit and has been a real estate operator but is now semi-retired. . . . **Randall Cremer** is now living at 825 Fifth Avenue, N.Y. After having retired six years ago, living principally in Spain and Mallorca, he has returned to New York with his old company, the Frederick Snare Corporation.

John and **Carolyn Noyes** left soon after our reunion last June on a North Cape cruise. En route they stopped in Ireland and Scotland. They report a very interesting trip up the Norwegian fjords. This was followed by an overland trip across Norway through Denmark, Sweden and Finland, including Lenin-grad and Moscow (Gotland), Poland and West Germany, and a week at the new Amsterdam Hilton hotel which had just opened up where they were given the red carpet treatment and regretted that they had to leave. Next came a boat trip up the Rhine River from Rotterdam and Mannheim. In Heidelberg they rented a car and toured Switzerland and Austria for two months. Here they were joined by their daughter Lillian who is remaining in Heidelberg for a full year at the university where there are about 1,000 other foreign students. They are both looking ahead to our next reunion and feel that we should spend a full week at the Cape.—**Frederick J. Shepard, Jr.**, Secretary, 31 Chestnut Street, Boston 8, Mass.; **John Noyes**, Assistant Secretary, 3326 Shore Crest Drive, Dallas 36, Texas.

'13

The Big Show, our 50th Reunion, is approaching very rapidly. Are you preparing for it and have you sent in your

postcard? To date (February 18) we have received 88 replies and there are 68 signed up as coming to the reunion including guests and wives. . . . We have been informed that after a long illness, **Fred Murdock** passed away on Thursday, December 13, 1962. He was buried on Monday, December 17 with private services in Anthony, R.I. Fred founded and was the former president of the Murdock Webbing Company of Central Falls, R.I., and Greenville, S.C. He resided for many years at 88 Rumstick Road, Barrington, R.I. He retired in 1955 from the firms he founded and spent the remainder of his life between his Rhode Island home and his southern home in the Carolinas. We of 1913 will miss our loyal classmate, who always had the interests of the class at heart and served as secretary during two periods when he resided in the North.

We received an interesting letter from **John F. Foley** and we quote in part: "I spent two years with you at M.I.T. in the Class of 1913. I was very glad to get my copy of the 'Class History.' It was most interesting and brought back happy memories. But, you can imagine my chagrin when on page 69, I saw an ugly black mark before my name, indicating as it states at the top of page 68, that I was deceased. I can assure you, Phil, that I am very much alive and kicking. I am wondering what reaction my good friend and Army buddy, **Bill Mattson** had, when he saw that asterisk! Bill and I fought the World War I together. We were fellow officers in the 101st Engineers, 26th (Y D) Division and Bill sees my name, once in a while, in 'E Company Echoes,' a regimental publication." Well, John, I apologize for that horrible error, for I thought that Lester and our family did a satisfactory job of proof-reading before the "History" was published and distributed. Further, your case was the only mistake observed or reported. Again our most sincere apologies. We have checked the official records in the Alumni Office, and we are very glad to report that you are in the active file. Although John advises he will be unable to attend our 50th Reunion, his heart is in the right place and holds no ill-will as he encloses a check to the Alumni Fund. Quote: "Have fun at the 50th Reunion and remember me to Bill Mattson and good luck and best wishes to you all."

Your secretary has again entered the local political arena. He has received the Republican nomination for town treasurer of Canton, Mass. This office was held by his cousin, since deceased, for 37 years. Can he beat this record? Also, your scribe has guided the Canton and Norwood Industrial Development Commissions through the preliminary conferences with our congressman, the Greater Boston Chamber of Commerce (Earl P. Stevenson, '19, President), and with the National Air Space Agency (Franklyn Phillips, '41, Regional Organization Office, located at Arthur D. Little Building, Cambridge, Mass.). This \$50,000,000-project has been earmarked as a must by President Kennedy, in the proximity of M.I.T. and Harvard. We, of Canton and Norwood, Mass., believe we have the

1,000-acre site needed and all other requirements here in our Neponset River Valley. The establishment of this long term air space laboratory in our vicinity would be of great value to all the bordering towns, although we are in very intensive competition with many other towns in Massachusetts as well in other states. . . . We have lately received a brief notice from the Alumni Office announcing the death of another classmate, **Levett L. Custer**, 4490 W. Hillcrest Avenue, Dayton 6, Ohio. If any of our classmates have any particulars on Custer's death, both The Technology Review and our secretary would welcome the details and would publish further notes. . . . Watch for more details of our 50th Reunion, both in this publication and publicity from your Reunion Committee. Have you given all you can to our Reunion Gift for the Institute? Remember the dates: June 7-10, 1963.—**George Philip Capen**, Secretary and Treasurer, 60 Everett Street, Canton, Mass.

'14

After trying out Florida for a couple of years another of our classmates, **Clarence Smith**, has made it his permanent home. While he has not yet left his former home in Seymour, Conn., he expects to leave after this summer and return to the new home he has just purchased at Boca Ciega Island, off St. Petersburg Beach. . . . **Homer Calver** has been visiting for the winter in San Miguel de Allende, Mexico, which, I believe, is a bit north of Mexico City; Homer hopes to run down to Mexico City for the M.I.T. Fiesta in March. He also asked about our 50th Reunion as he has not seen where and when it is to take place. If anyone has missed our mention of it, it is to be June 12 to 15, 1964, at Cambridge. There will soon be much more data sent out about the reunion; **Ray Dinsmore** is the chairman.

Jim Holmes and his wife have been on a world-wide trip. His description of Egypt is of such interest that it seems worthwhile to cut other notes to quote his letter. Although I have been in Egypt at least five times, I must confess that I never went up to Luxor, much to my sorrow; this is largely because I spent much of my time at the University of Cairo. Jim does not mention the museum of King Tut's golden sarcophagus and the other marvelous items, nor my climbing up inside of the huge pyramid of Giza, bent over to my knees, some years ago now. I shall wait to see Jim's slides in Los Angeles. Part of Jim's letter is as follows: "The word 'fabulous' is the only word I can think of for ancient Egypt, going back more than 5,000 years. Even in those earliest days of recorded history, the things they built showed they knew engineering and construction of a high order, astronomy, mathematics, civil engineering and architecture. They worked beautiful things in gold, bronze carvings, paintings and sculpture. We all know

about this, but to see it fills one full of wonderment that as far back as that, there was a people who created such culture, including courts and hospitals.

"As you know from our schedule, we went to Luxor. Was it hot! It was 105 and 110 degrees and hot at night. No air conditioning. The land now is flooded by the Nile, so also has fairly high humidity. Reminded me of our desert in the summer. How hot one feels has something to do with one's mental attitude. So, we put on the right attitude and got along fine in the day time, but at night the hotel room was an oven and all you could do was sweat it out. We enclose snapshots showing us taking time out for a wet drink, but not cold as there was no ice that day (maybe no ice any day). This is the Valley of the Kings at Thebes. The other picture is the same day (110 degrees) going from one tomb to another. These tombs are deep and cool (we went down one 300 feet); so to get to another cool tomb we are hustling.

"I have taken many pictures in Egypt, and we bought a few slides showing some of the beautiful interiors of tombs and other temples. Luxor was worth all the heat. One should not come to Egypt without seeing Luxor. One of our memories will be the huge pyramids at Giza (just out of Cairo) floodlighted at night. Another is the outstanding tombs and sarcophagi for the Sacred Bulls at Sagara, deep in a long gallery cave with separate rooms containing huge one-piece granite sarcophagi, each weighing many tons. There are 70-plus of these. There is so much to tell about our visit to Egypt that right now I give up in this letter. There is an evening we went to the great bazaar in Cairo. We were with an Egyptian acquaintance who had a friend who has work shops or small factories. The selling, bargaining is done in the stores, very small, in the bazaar. It is a maze of threadlike alleys, teeming with children and people. I wish I could give you the local color which was everywhere."—**H. B. Richmond**, Secretary, 100 Memorial Drive, Cambridge 42, Mass.; **Charles P. Fiske**, President, Cashmere Paynes Bay, St. James, Barbados, B.W.I.; **Herman A. Affel**, Assistant Secretary and Class Agent, R.F.D. 2, Oakland, Maine.

'15

There's no class like our class! On January 25 neither snow nor ice nor the freezing winds of winter could stay 24 classmates from our annual New York City Class Dinner at the Chemists' Club there. Again, **Bur** and **Larry** did an outstanding job of setting up this successful and enjoyable evening. From highways and byways to compete for long distance honors came **Larry Quirk** and **Wayne Bradley** from upper Connecticut; **Bill Spencer**, Baltimore; **Sol Schneider** and **Dick Bailey**, Philadelphia; **Phil Alger**, Schenectady; and the Winnah **Ben Neal**, Lockport. What a class! From metropolitan New York came **Jerry Coldwell**, **Alton Cook**, **Ralph Hart**, **Hank Marion**, **Gil Peakes**, **Bur Swain** and **Ray Walcott**.

From Boston, **Larry Bailey**, **Whit Brown**, **Bill Brackett**, **Sam Eisenberg**, **Larry Landers**, **Azel Mack**, **Archie Morrison**, **Wally Pike** and **Pirate Rooney**. After a cocktail hour, the **Pirate**, older but as limber and as loose as in Summer Camp days, opened the evening with a rousing "We are Happy." **Sam** treated us to wine at dinner—a delicious dinner that **Bur** and **Larry** will have a challenge to excel next year. **Ralph Hart** brought his collection of 3-D slides from the 1950 and 1955 Reunions, and what clear, vivid colorful pictures they are—a pleasure to see such wonderful shots; and many thanks, **Ralph**, for your thoughtfulness in bringing them. . . . **Gil Peakes** is a philatelist specializing in rare United States issues, and does he know all the angles of stamp researching! . . . It was **Whit Brown's** first trip down with the Boston crowd, and we are sure he will be a repeater. A warm and rousing hand of applause for **Larry** and **Bur** expressed our appreciation and thanks for their devoted time, efforts and interest in doing such a grand job for the class. Nice going, men!

After dinner more than half the crowd adjourned to our headquarters room upstairs for an evening of nostalgia and soft singing led by **Speed Williams** and **Archie**. Regrets from many of our regular old attendees for their absence hurt our attendance, and we missed all these good men and true: **Herb Anderson**; **Sam Berke**, en route South; **Henry Daley** and **Clive Lacy**, not feeling so well; **Otto Hilbert**, on a South American cruise; **Joe Livermore** wrote he was in Jamaica (W.I.) on business (don't laugh) and would continue on to Colombia and Panama; **Boots Malone** was in Sarasota; **Cliff Sifton**, hibernating in the Jersey hinterlands; **Vernon Stewart** and **Ed Whiting**, regrettably ill; **Jim Tobey** and **Ed Sullivan**, flagrantly suffering in the now hot sun and sand of Florida. . . . At our dinner **Ben** spoke briefly but enthusiastically about our 50th Reunion Party. Now that SCF has been completed, **Ben** is back in business and cheerfully reported some generous contributions. . . . Our dinner was high-lighted by the valuable, attractive and useful take-home gifts for everyone. **Jac Sindler** from his Spirit-Inc., gave a container of assorted colored cocktail picks and our company, **Pexter Chemical Corporation**, gave a Hi-Fi record static cleaning kit. . . . How about your class dues? Just stick your check in that postage paid envelope. There'll be no high pressure solicitation nor follow-up on this—just give. . . . For "fun, frolic and friendship" be sure to come to **Al Sampson's** Annual Class Cocktail Party on Alumni Day at 4 in the afternoon, June 10 at the M.I.T. Faculty Club. **Barbara Thomas** will help him greet you there.

Harry Wylde, '14, X, chose a good time in January to be in San Diego. . . . Christmas cards and messages from more than 50 classmates and their families warmed our hearts with a fine old friendly feeling. I'll report these next month. From 17410 Fairway Drive, Detroit, here is a fine letter from **Loring Hall**: "I was sorry to receive the sad news about **Weare**. Thank you for sending the card. Like many of our classmates, I have been roam-

ing pretty widely during the last four years. Most of my traveling has been on business, as a consultant for **United-Carr Fastener** and as a director of **Elox Corp.**, leading maker of electrical discharge machining equipment. The two companies don't have anything in common, as far as products go, but the basic principles of marketing apply to both, and I enjoy the stimulation that results from new situations. Most of our foreign ventures are doing well, but I have been greatly disappointed in the turn of events in South America. Argentina made a good impression on me when I was there two years ago, and I still think it has a great future, but the trick is to calculate when to step in with an investment. In between trips I enjoy playing golf, and last summer (including the full month of November in this balmy Detroit climate), I played more rounds than I can remember playing in any other season. **Ruth** and I are going to stretch the season by spending the next two weeks in Phoenix. There was an addition to our family in November—our first great-grandson." . . . Touching letters from **Kath Howlett** and **Al Sampson** warmly express their feelings and are very rewarding to our class. **Kath** wrote: "Thank you for writing to me words of comfort and understanding. Your sympathy is greatly appreciated. Will you let all the classmates know how very much I appreciate all their messages and comforting words? It is their loss as well as mine and my family's. Thank you so very much for all your kindness." **Al** wrote: "When the Divine Decision decrees one near and dear should answer the call, then one realizes what old friends and classmates really mean. Your kindly expression of interest and sympathy—the beautiful spray of White Carnations and Lavender Poms—brought me comfort and solace and gives me confidence as I turn the page in *Life's Book* to a new chapter to read—alone—but knowing you are nearby."

When you are reading these notes **Fran** and I will be on our way to the West Coast to sail April 12 from Los Angeles on the **Matson Line's "Mariposa"** for a six weeks' South Pacific cruise. **Ray Stringfield**, **Bob Welles** and **Dave Hughes** are setting up a sailing dinner the night before we leave and it surely will be fun to see these West Coast classmates and their wives. Then, upon our return May 23 to San Francisco, **Earle Brown** is doing the same there. . . . **Mary Plummer Rice** has written: "Dear **Azel** and **Fran**," whom I've never had the pleasure of meeting but feel as though I knew, I was indeed delighted with your letter and plans. Even though I have been here 11 years, 10½ too long, I've never gone west, north or south of San Francisco. I just hurry back East every chance I see. Is it possible I'm homesick? Probably, as I am so happy every time I meet anyone (mostly soldiers or sailors) from Boston or New York. Next year I'm really selling this hilltop house and after a freight trip around S. A. to Buenos Aires and a year at school in Paris, I hope to stay East when I reach New York in June, 1965. And yet I love everything I do here; but it just isn't home. Have a wonderful cruise and

tell all about it on May 23rd. I am looking forward to seeing you both." It's remarkable how she keeps so active. She is planning to be at our 50th Reunion in 1965 in Cambridge. Are you? We'll be back home before the end of May in plenty of time to be sure to see you all at the June 10 Class Cocktail Party. Waikiki Aloha!

Robert P. Sherman died May 6, 1962, on the West Coast. . . . Robert A. Schmucker, Jr., '39, wrote: "My father **Robert A. Schmucker**, '15, died at his home in Hudson, N.Y., last July at the age of 77. He was a graduate of the Episcopal Academy, Philadelphia and of Exeter. He was a member of Course III, Mining Engineering at M.I.T., and his career included assaying in Colorado, a number of years in mining with Braden Copper Company in Rancagua, Chile, and finally teaching physics and math in the high school at Hudson, N.Y." The sympathy of our class goes to the families of these departed classmates. . . . Remember our famous last line—"Help Azel" and pay your class dues. Many thanks, many blessings.—**Azel W. Mack**, Secretary, 100 Memorial Drive, Cambridge 42, Mass.

16

From the snowy inclines of Davos, Switzerland, came "par avion" word in January from our irrepressible ski-propelled president **Ralph Fletcher** proclaiming "Hi ho!" (you should see the sparkle-eyed raggedy skiing bear in the picture). "Here for a few days. Alles gut! Bones intact so far. Skiing wonderful. Home the 29th. Our best, Sibyl and Ralph"; an alphabetical message follows. But once home, he has more to say for the start of the column, to wit: "Don't miss it! Our 47th Reunion is coming up June 7, 8, 9, on the Cape. We are looking forward to another wonderful get-together, and as I've said before: 'We have a wonderful group of classmates and their ladies at these reunions, and everyone has a great time.' Be good to yourself and come. You'll be so glad you did, and so will the rest of us!" . . . How about this—two in a row for 1916! In December **Joe Barker** was named recipient of the 1962 Charles F. Kettering Award for Meritorious Work in Patent, Trademark, and Copyright Research and Education. And a year ago, **Vannevar Bush** received the 1961 Kettering Award! This award, dating back to 1957, is announced at the end of each year by a board of review of the Patent, Trademark, and Copyright Foundation located on the campus of the George Washington University. According to a December BEMA News Bulletin: "Dr. Barker and Mr. Kettering, along with others, helped organize the Foundation in 1954, whose work includes the publication of 'The Patent, Trademark, and Copyright Journal of Research and Education.' The Kettering Award . . . will be presented with the citation and medal at the annual public conference of the Foundation in Washington next June. Joe continues as consultant to BEMA's (Business Equipment

Manufacturers Association) Data Processing Group in New York, and at the turn of the year he took on another assignment as consultant to NASA. It is difficult to see how he does all these things, but we presume that his retirement from school board activities gave him some time that he felt should be occupied. We now have a good picture of him for the reunion bulletin board.

Kem Dean wrote from Houston; he said he had read a short announcement in his paper that Lobby had died in a Houston hospital, and was all set to go to the funeral but something prevented. He was told later by one of the younger alumni "that there was a good attendance at the services. Burial was in Monterrey, Mexico, and several members of the M.I.T. Club of South Texas flew down to Monterrey in a private plane. One of Lobby's classmates has written up a very complete story and I was told today it will appear in the next issue of The Technology Review." Kem closes with: "Wishing you and all '16ers a Happy, Healthy, and Prosperous 1963." . . . **Ken Sully** reports he retired September, 1961, after 35 years of service, from Public Works, Bureau of Engineering, City of Los Angeles. Says that shortly thereafter he and Mrs. Sully enjoyed a most happy trip to the Islands, but that "Last May, I was bereaved by my wife's untimely death." The class's sincere sympathies to Ken.

Jim Evans reports receiving from Ralph Fletcher in Switzerland one of those "who's-an-old" cards. As a matter of fact, Jim has again supplied us with news from quite a few '16ers. He reports that **George Petit** continues seriously in his consulting work on "Trend Analysis," a system George has developed for studying economic series and predicting turns with quite a nice probability of success. Jim heard from the **Cy Gueithings** in mid-January, from their favorite haunt, Pink Sands, Harbour Islands, Bahamas, where Cy had just caught nine bone fish "but no flu yet although the town is full of it." . . . **Stew Rowlett** reveals that he is in a watercolor class studying portrait painting with a top artist. He is "never bored." . . . **Francis Stern** tells Jim of his holiday visit with his daughter and family in Los Angeles, and of his grandson's high marks in college; and, says Francis, perhaps stretching a point: "Gosh, if I got an 'L' at Tech, I puffed up! Once I got a 'P'! The only 'C' was in military drill!" Says Jim, **Maury Holland** is on a consulting job with Communication Research Institute in Miami, Fla., where he will be until May 1. . . . We should add that Jim himself is back substitute teaching math and science in the Paterson, N.J., High School and with this renewed activity now looks like his old self. . . . **Harold Mills**, too, appears pretty well recovered from his back ailment, as a result perhaps of exercises and frequent walks to the local P. O. with your secretary. He reports a letter from **Howard Hands** in which Howard extols the virtues of the warm climate in Florida (Clearwater) and of the plan he and his wife follow—New England three or four months in the summer.

We have another newspaper picture of **Bob Wilson** by way of Switzerland—mailed from Davos-dorf by Ralph Fletcher; the story appeared in the January 15 issue of the Boston Herald which Ralph apparently carried with him on the plane to his ski-holiday. The picture accompanies an article headed "Irradiated Foods Soon on the Market" and has the caption: "New era in food preservation is discussed at International Conference on Radiation Research at Army Quartermaster Corps' Natick Center. From left, Dr. Dale H. Sieling, scientific director, Natick Laboratories; U.S. Atomic Energy Commissioner Robert E. Wilson; and Brigadier General Merrill L. Tribe, commanding general at Natick." According to the article, the food radiation program "could make available the bounty of America in lands where refrigeration is unknown. The Food and Drug decision must be made by February 10." Days later, Bob Wilson gave an invited after-luncheon talk on the work of the A.E.C. at the Engineers' Club in New York, January 21, before an audience of upwards of 200. George Dandrow, '22, just back from a wedding trip, took care that 1916 was represented and well cared for and heard the timely and fascinating story of what the A.E.C. is doing both in defense and peaceful applications. Sixteeners in the audience included **Joe Barker**, **Jim Evans**, **Walt Binger**, and your secretary. Also back on November 27, Bob Wilson made some official remarks, as A.E.C. Commissioner, at the panel discussion on "Policy Objectives and Government Organization," Atomic Industrial Forum, in Washington. He talked on two of his favorite subjects, the private ownership of special nuclear materials, and plutonium buy-back policy. He hopes very much that Congress will enact the necessary legislation "before I finish my service with the Commission, because I feel that accomplishing this will mean much, both to the Government and to the cause of atomic power at home and abroad."

Word from **Moose** and **Alexandra Jewett** in Buffalo indicates he is fine again. Last May they attended his 50th at Hotchkiss School and, as she notes: "Quite a few of his good friends and wives there and all still able to wiggle and have fun." They spent the summer in their home in Eden Hills except for a week's fishing in Canada. They had all their children and grandchildren for Christmas dinner, a total of 19, including themselves. Moose still carries on as president of the Industrial Park on a consulting basis, head of a building committee at the general hospital (just starting a new building), a director of Erie County Bank, just finished up as chairman of building committee Albright-Knox gallery, and an elder in Westminster Presbyterian Church. Busy? We'll say! . . . Thanks to **Theron Curtis** for this clear-cut informative answer to one of our letters: "In answer to your topics. (1) Doing nothing mostly. Trying to learn how to enjoy retirement. I build replicas of antique clocks. (2) Been at home mostly; saw New York Boat Show. (3) The Class Treasurer frequently

(that's **Hovey Freeman**, Ed.). (4) Enjoy three local grandchildren and keep in touch with four others at Redstone Arsenal, Ala. (5) Philosophy? Heh! Heh! Looks like the good old dollar is being licked in Washington. Oh, well, we won't be around to see the grandchildren suffer."

We had a nice surprise telephone call in January from Lexington, Ky., and practically no '16er would have to guess twice as to who it was from. Right! **Dina Coleman**! He reported temperature there then, lower than we had yet had in northern New Jersey—12 degrees below 0! . . . Back in January, we reported **Rudie Gruber's** gift to Rutgers University as a memorial to his wife who died in 1960. This brought to our attention something we did not know about before, the Rita Welch Gruber Memorial Scholarship at M.I.T., a scholarship fund that is now in its second year. We are glad to report the following which we have now gotten from Rudie: "In 1961, the scholar was a Norwegian, specializing in gas-turbine research. The 1962/63 boys are again Norwegian (electrical engineering) and a young fellow from Iceland (physics/mathematics); both are delightful personalities. These arrangements have led to most rewarding contacts with M.I.T. faculty members and frequent visits to the Institute." . . . The **Don Websters**, in Bermuda until April 3, say they're happy to be missing the weather back home. This is their sixth visit to these "charming islands," and "they still have charm in spite of motorization, and a trend toward overpopulation and overbuilding. They are children of the ocean and people can't spoil this brilliantly blue and turquoise water which is all around us." Don says: "This oldest British colony, dominated economically by American, English, and Canadian tourism, is a laboratory of social problems; population about 40,000, 25,000 colored, 15,000 white, land area about 21 square miles. Population increases will pose a serious problem 15 years hence. But beautiful now and we are having fun."

We have a youthful-looking picture of **Charlie Reed** for posting on our reunion bulletin-board, showing him alongside Christmas stockings hanging from the fireplace mantel. He writes: "For the past couple of years I have been working full time for the McLaughlin Research Corporation here in Washington. My job is on battery alignment of anti-submarine weapons. Some weeks ago Mildred and I spent a pleasant evening with Bob Wilson, **Irv McDaniel**, and their wives at Bob's apartment in the Westchester." Charlie has two sons in the regular Army, a lieutenant colonel and a major, and a third son with Design and Production, Inc. in Alexandria, Va. And finally his "special treat": "I have tried retirement twice, once when I was 52, once when 60. In each case I ran out of things to do and went back to work. Retirement is something to look forward to, but don't ever catch up to it." . . . **Arvin Page** continues as chairman of the North Carolina State Board of Registration for Professional Engineers and Land Surveyors. He was sorry to hear of

Flipp Fleming's passing; he said he last saw him at a reunion "held at Fisher's Island—I think it was our 10th, and I rode the train with him back to New York." Arvin says: "As for me, I'm in the same old rut. Three days a week on a consulting job since August 1. I originally accepted this assignment under the impression it would last a couple of months but the end is not in sight yet." . . . At long last, we've heard from **Horace Bickford** in Jonesport, Maine. Says he's semi-retired, his son is a consulting engineer, and his grandson Peter, in the sixth grade, is doing very well.

The **Irv McDaniels** are coming home from Spain this summer, and are planning all the things they want to do before that. They expect to spend May, June and July in the British Isles and see most of the cathedrals, castles, Stonehenge, hallowed areas, etc. Then to Austria, Greece, and a Greek freighter home from Athens about the end of August. Irv continues worried about things: "If the people of the U.S.A. would only read a little history, they would be as alarmed as I am over Where We Are Headed. Remember that the Empire of Athens (Age of Pericles) lasted only 40 years. They wasted their substance building Parthenons. The greatest empire the world has ever known (Spain in the 1500's) was short lived. They wasted their substance trying to bolster the church. The British Empire was doomed when ships began using oil instead of coal. Since 1920, England has wasted her substance. But we are wasting our substance ten times faster. I guess 'shirt-sleeves' applies to countries as well as to people. The safest thing to write about is the weather. It has been just as bad here as elsewhere in the world. Here we have had nothing but rain, and I mean Rain!" . . . The **Len Stones** were starting off on another six-weeks trip in the Caribbean; this time they expect to bask and see what is doing in St. Croix, St. Martin, Antigua, Trinidad, and Tobago (the latter two are just off the northeast coast of Venezuela).

Via **Jim Evans** we have a picture and feature article from **Phil Baker** in the January 4 issue of the Detroit News. The heading says: "Reds Step Up Wall Ordeal, Pointe's Berlin Hero Says," and the picture caption says: "Major Thomas Tyree and Wife on Visit Here from Berlin." Mrs. Tyree is of course Joan, the pretty daughter of **Steve and Jessie Brophy**. According to the News article, Major Tyree is a deputy operations officer in Berlin for the U. S. Army and has been on duty in West Berlin for 18 months. "He commanded the task force which had a direct confrontation with Russian tanks at Checkpoint Charlie in October, 1961." The Tyrees left Detroit after visiting his mother in Grosse Pointe, and "The couple will return with their children, Thomas M. Jr., 2, and William B., 6 months, for another 18 months. The children are now with Mrs. Tyree's parents at Pawling, N. Y." Now we know what kind of business Steve and Jess had around New Year's!

We have lost one of our most regular

respondents to requests for class news and one of 1916's few bank presidents, **Ernest C. Gagnon** of Hartsboro, Ala., who died very suddenly last April 13. During World War I, Ernest served in the U. S. Army, 37th Division, in France, as a lieutenant. He was associated with Goodyear Tire and Rubber Company from 1916 to 1952, and lived out of the country with his wife for 30 years but came back frequently on home leaves. He was chief chemist at Toronto until 1927, Technical Superintendent Argentina Plant at Buenos Aires 1930-42, Plant Manager Director at Lima, Peru 1942-51, and finally production manager Goodyear foreign operations in charge of the factory at Buenos Aires until December, 1952, when he retired and settled down in Hartsboro. A most friendly letter from Mrs. Gagnon says: "It was unfortunate for us that we could never be in Massachusetts in June for a reunion. We lived in South America for 22 years; we had a good life there. South American friends, their culture and backgrounds, gave us much pleasure, and we liked meeting people from other countries. Due to ill health it became necessary for Ernest to retire, which he did, December, 1952. After that it was also impossible for him to attend a reunion, although he always thought he could 'next year'." In South America they did a lot of sight-seeing in many countries, attended concerts and opera at the Colon in Buenos Aires for 10 seasons, and visited prehistoric ruins near Lima and in the high Andes. In Hartsboro, Ernest became the director of a local bank, and when the president died suddenly, he served as president, as reported in this column, and met many people from the surrounding country. It is reported: "He liked them; they liked him; the 'man from Massachusetts' who loved Alabama." We are going to miss Ernest's pleasant letters and send our sincere sympathies to Mrs. Eva (Chandler) Gagnon.

We are very sorry to report the death on December 30 of **Walter Littlefield** in the New England Baptist Hospital. His home was in Auburndale, and he was a partner in the Boston real estate firm of F. D. and W. B. Littlefield. The Boston Morning Globe says: "He was chairman of the finance committee of the Roxbury Home for Aged Women, and was a former trustee of the Roxbury Latin School. He was a member of the National Society of Analysts, Harvard Club of Boston, Rotary, Brae Burn Country Club, and the Ridgewood Country Club of Danbury, Conn." . . . We also regret to report the death of **William Chandler** on December 19 at the Maine Medical Center in Portland, Maine. As reported in the Boston Herald: "A native of Brookline, he attended M.I.T. and served with the U. S. Army during World War I. He was for many years assistant to the chief engineer at the Saco-Lowell shops in Biddeford. He was a member of First Parish Church, Portland, and the Sons of the American Revolution." He leaves his wife Grace (Edgar) Chandler, two daughters, and a son.

Charlie Lawrance expresses some joy at getting back into circulation again af-

ter a number of operations, including three related to circulatory troubles following heart attack problems. In January he was again "in vigorous health and getting back my orneriness and eagerness to get out again." He mentions he had a very fine visit from **Henry Shepard** "and was thrilled by his accounts of rebuilding his Stanley steamer car and his Cadillac of early dark ages vintage." Says he's looking forward to discussion of probability and statistics at the reunion. . . . **Saul Hoffman**, after retirement a year or so ago, moved to sunny California where he keeps busy doing research at UCLA and manages to "keep out of my wife's way during the day. I have a daughter who goes to UCLA, majoring in philosophy and languages. Two of my sons went to M.I.T., classes of 1951 and 1953, where they remained to receive their doctorate degrees." In reply to our request for a bit of philosophy, Saul notes how important it is "to analyze what is success or one's aim and purpose in life." Again, he indicates an important purpose in life is to help our offspring attain high achievement more easily than was possible for ourselves, "and to leave the world better off for having lived in it. . . . The more one has achieved and attained, the greater the joy—passing on to our offspring all we have—physical, mental, moral, and spiritual. Believe me, it is a great joy and satisfaction." . . . The February 7 monthly class luncheon in New York was well attended by the joint forces of 1916 and 1917. "They" beat us again, this time by a score of 7-and-a-fraction to 5, Bill Neuberg being counted as a fraction because he arrived when the luncheon was about over. The '17ers were especially pleased to count Ray Stevens and Leslie Groves in their group which included some other well-known names: Littlefield, Loengard, Morton, Proctor, and Spalding. On our side, the record shows Messrs. Barker, Dodge, Evans, McCarthy, and Mendelson, with regrets from Messrs. Best and Stone. Sixteeners, and for that matter Seventeeners, who travel to New York should plan their trips to include the luncheon. . . . **Larry Knowlton**, in retirement in Cumberland, R.I., says there is just nothing worth reporting about his activities. He enjoys reading our reports "even though there are very few members of the class that I would recognize if I saw them. I sort of live in reflected glory from the famous or glamorous exploits of many of them." . . . And so we come to the end of the column with thanks for the many responses to requests for news, comments, or bits of philosophy. Mark that calendar now, June 7, 8, 9, for the 47th Reunion, and keep the paragraphs coming in. A happy and healthful springtime to one and all! —**Harold F. Dodge**, 96 Briarcliff Road, Mountain Lakes, N.J.

'17

Dix Proctor, who M.C.'s the monthly 1917 luncheon at the M.I.T. Club of New York, invites all 1917ers who happen to

be in New York City on the Thursday of the first full week of each month to join the group at club headquarters in the Biltmore Hotel. If you advise him in advance (address at the end of these notes), he will make a special effort to invite any of your friends that you may designate. In January, **Jim Flaherty** of Dedham, Mass., made a special trip to New York just for the luncheon. The regulars at the luncheon, besides Dix, are Dick Loengard, Ray Brooks, Bert Morton, and now and then Enos Curtin and Bill Neuberg. . . . **Bill Hunter** invites anyone who is traveling in Switzerland to visit the Hunters at the following address: William B. Hunter, 6 Kusenstrasse, Kusnach, Z.H., Zurich, Switzerland. Bill expects to be there on business for a few years. . . . **John Holton** writes: "We're off this week (January 5) to see our daughter and family in Rio de Janeiro. We intend to fly around South America while we are there." . . . Our class president, **Ray Stevens**, apparently is not going to sit in an easy chair now that he is tapering off at Arthur D. Little. In January, he was appointed president of the Massachusetts Small Business Investment Company.

We continue in this issue a recital of retirement activities of members of the class as reported on the questionnaires. We are confining these notes to those who have actually retired. Many others who replied indicated continued activity in their long-time business interests with no thought of retirement. We will reserve comments on them for another issue. **M. J. Mackler**, Tampa, Fla.: Boy Scout Council; United Cerebral Palsy; Association for the Blind; veterans' organizations; church activities; some fishing and golf; **Duncan MacRae**, Bel Air, Md.: Reading, writing, outdoor work including raising a few lambs; member, Harford County Metropolitan Commission; member, Advisory Committee for the Harford Junior College; member, Attendance Committee of Bel Air Rotary Club. (I interrupt the flow of retirement activities with an anecdote which Duncan typed on the back of his questionnaire: "Do you know the one about the Medicine Man and the Three Squaws? Well, the three squaws were about to have babies. One was on a bear skin, one was on a buffalo hide, and one was on a hippopotamus hide. The first two each had a baby. The medicine man said: 'The next one will have twins.' When asked how he knew, he said: 'I have studied geometry. The squaw on the Hippopotamus is equal to the sum of the squaws on the other two hides.'"); **W. H. McAdams**: author, investor, and self employed person; **C. G. Miller**, Upper Montclair, N.J.: consultant, International Telephone and Telegraph Communications, Inc.; **A. R. Morton**, Brooklyn, N.Y.: secretary, local Radio Engineers: Professional Engineers Code Committee of New York City; Missile Base Control Consultant; **A. S. Niles**, Stanford University, California: reading, writing history of the Palo Alto Unitarian Church; **Ernest M. Pace, Jr.**, Los Angeles: social and domestic; **Dean Parker**, Grosse Pointe, Mich.: teaching at Wayne State University in Detroit; technical and marketing consultant in surface coatings and

pigments; **Dix Proctor**: assistant gardener and maintenance man for his four buildings, Lincoln Park, N.J.—a full time job; chairman, Advance Commission of First Reform Church of Lincoln Park; **J. Worthen Proctor**, Northampton, Mass.: "I had 4 years service as professor of mechanical engineering at Bucknell University, and am now fully occupied helping my deaf son with his studies in the same line. Nearing 70, I go to all classes with him to catch the lectures"; **J. R. Ramsey**, Plainfield, Ind.: consulting work in the field of job evaluation; **L. C. Roberts**, Cornell University, Ithaca, N.Y.: gardening, bridge, and teaching communications engineering at Cornell; **Ralph Ross**, Danville, Vt.: president, Board of Trustees, Brightlook Hospital, St. Johnsbury, Vt.; vice-president and chairman; executive committee St. Johnsbury Academy; chairman, Business Committee, North Congregational Church; vice-president, New Hampshire and Vermont Blue Cross; member Vermont State Highway Board; **Lew Sanborn**, Saugus, Mass.: president, Saugus Co-operative Bank; director, Saugus Trust Company; **Thorn-dike Saville**, Gainesville, Fla.: directed three-year science and engineering center study at the University of Florida; presently consultant to the president; consulting engineer; **E. G. Senter, Jr.**: Dallas, Texas, week end golf and politics at the precinct level; **J. J. Storrow**, Marblehead, Mass.: director of three forest conservation outfits; chairman of Marblehead Conservation Commission.

A. P. Sullivan, Westfield, N.J.: collection, restoration and repair of antique clocks; **Warren Tapley**, West Falmouth, Mass.: golf, antique clocks, social and town affairs; **Harry Wansker**, Newtonville, Mass.: American Ordnance Association; Armed Forces Chemical Association; Atlantic Council of the U.S. Navy League; NATO; Newcomen Society; Beacon Society; **Richard Whitney**, Redart, Va.: loafing, being critical of the present administration; some travel, some yachting; local civic activities; **Walter Whitman**, Washington, D.C.: International affairs; travel; **A. R. Williams**, Vicksburg, Miss.: attempting to develop a new concept for "anti-skid" braking; family activities and music; **Paul Woodward**, Rosemont, Pa.: have been busy building a new retirement home; Class Secretary **McNeill**: church trustee; director and executive committee, National Society for the Prevention of Blindness; chairman, Business Improvement Service, Greater Hartford Chamber of Commerce; writing a book for Prentice-Hall, Inc., on "Effective Cost Control Systems"; as well as a few consulting assignments.—**W. I. McNeill**, Secretary, 107 Wood Pond Road, West Hartford 7, Conn.; **C. D. Proctor**, Assistant Secretary, P.O. Box 336, Lincoln Park, N.J.

'18

Surely the topmost development in the earth's swarming inhabitants is the ability to think. In homo sapiens, this has led to an unending search for under-

standing which underlies anything that deserves the word education or qualifies as research. Thus **Jack Poteat** pursues both, in a truly pleasant way, by travel. You will recall that last month our chronicle included part of his report of a journey to Alaska. It left him enjoying the rich experience of masticating a bit of moose meat somewhere in the wilds of the Yukon. "At Carcross," he goes on to say, "we reached the former head of Yukon River navigation, 2,000 miles from the river's mouth. Salmon still come this far to spawn. A large stern wheel steamer was pulled up on the river bank. An Indian who claimed to have been with the first discoverers of gold was selling "X" autographed pamphlets describing his exploit. Two Indian boys with a magnificent Husky were there for photographers, and the tourists milled around the two or three stores in what was once a city of 20,000 but now has only 500 citizens. When we returned to Skagway, we taxied to Eagle's Hall (our taxi driver was the Madam). Decked out as an old gambling hall, it was the scene of the recreation of the Shooting of Dan McGrew, can-can girls gambling with bogus money, and all the fixins'. Tough guys and the local tradesman who staked the gamblers, were there, the latter with his watch chain made of large genuine gold nuggets. With all its present drabness Skagway is in an exciting area; such drifts of saxifrage in bloom as we had never seen before; waterfalls and rushing streams; a rock fall from the hill above the dock as we sailed. All these and many more tales must remain unsung in this brief account. On our return South we sailed through the Wrangell Narrows near where the largest mass otter hunts used to occur. In this area John Jacob Astor founded his fortune, for the month-long hunts yielded pelts worth \$2,000,000. There were battles between traders, explorers, Aleuts and savage Indian tribes over this fur trade. The Aleuts, who were magnificent hunters, had their catch stolen if they hunted, and they were massacred if they didn't. So their number was greatly reduced. We reached the town of Wrangell at about 9:30 P.M. to the music of the high school band. This is the third oldest town in Alaska (1834) and the only one to have been under three flags—Russian, British and American. The inhabitants eke out their living by fishing and lumbering, although the specialty offered for sale on the dock is a very peculiar dark garnet only mined nearby.

"Next morning dawned bright and clear. After a brief stop at Prince Rupert we set out for Vancouver. As we sailed through English Bay outside Vancouver we passed a school of whales desporting themselves about a half mile from the ship. This cruise took us to country quite different from any we had seen before, but it is country of great beauty. The Alcan Highway doesn't touch any of this coastal area and is only connected to the coast by the White Pass and Yukon Railway which has its inland terminus at Whitehorse, the control center for the highway. Because of the gold rush the most exciting and unique part of the

cruise was our stay in the Skagway area. They still tell stories about the legendary characters of the time, some of whom are alleged to be buried there. It is a colorful and interesting cruise. We highly recommend it. And another trip we recommend is a run to Tryon where the latch string is always on the outside for all who share this chronicle. Oh yes, Sally's third child is John Daniel, born January 25, 1962, which gives us four grandchildren—two girls and two boys."

Further communication with Jack reveals the tantalizing meaning of "Shanjilu," which appears on his letter head. "Shan" means mountain in Chinese, and "jilu" is the word for dwelling. Since the Poteat residence is perched at the nice elevation of 1,500 feet on the eastern slope of the Blue Ridge, no further research is necessary except to add that in addition to watching God's winged and legged creatures, Jack can see 50 or 60 miles over the Piedmont section of both North and South Carolina, or he can turn a discerning eye to the oriental decor of his "mountain dwelling." What he says he gladly lacks is a girdle of icicles around his eaves. . . . **Lawrence P. Marshall** has retired after 39 years of association with the Standard Electric Time Company, in positions ranging from engineering to purchasing, to a vice-presidency. He can now give more of his thinking to the Springfield (Mass.) Kiwanis Club, of which he has been a member for 31 years, or to the National Association of Purchasing Agents, of which he is also a former vice-president. . . . In January Dr. Albert L. Demaree and **F. Alexander Magoun** gave the Human Living lecture at Hawthorne College. Dr. Demaree is the recently retired head of the History Department at Dartmouth and a retired commander of the U. S. Naval Reserve. Magoun was in the U. S. Department of State during the war. The subject was Pearl Harbor, which few people will ever understand as completely as the perceptive members of that audience did because things were said which will never get into the history books. The art of politics is making people think something is so which is not so, or think something is not so which is actually true. Observe, for example, the current talk on tax reduction, whereas what the government suggests is really a tax postponement to be paid for over and over and over again in the form of interest on an unbalanced budget. The real objective is to avoid a depression—the bugaboo of every administration since Michaelson did such a shameful character assassination on Herbert Hoover in 1933.

Other international relations are being looked into by **Bill Foster**, who hopes to reach an understanding with the Russians on a nuclear test ban. On January 25 ladies representing "Women's Strike for Peace," presented bouquets to the Russian and British delegates then in Washington. There was one for Bill too, but it had to be entrusted to a messenger because he had gone back to work. Following their usual tactics of deception (copied from Napoleon's memoirs and Stonewall Jackson's Civil War manoeu-

vers) the Russians promptly broke off negotiations in order to confuse the opposition. "Never let the enemy know where or how you will strike next." As this is being written (February 9), with rare patience and maturity of spirit Bill has just gone to Geneva for further talks. Why expect any results as long as we are more powerful than the Russians? . . . Courtesy of Professor John B. Babcock, 3d, '10 (now retired from the Civil Engineering Department and living in Portland, Maine) comes the news that **Craig P. Hazelet** has been named as Louisville's "man of the year," and as chief engineer for the nation's "bridge of the year." He is the senior partner of Hazelet and Erdal, designers of the Sherman Minton Bridge, which has been chosen by the American Institute of Steel Construction as the most beautiful long-span bridge completed in 1962. A further honor was bestowed when the Kentucky Section of the American Society of Civil Engineers presented him with a Life Membership Certificate, accompanied by a special resolution recording the Section's great pride in the many accomplishments of its former president. The Class of '18 sends its congratulations.

Frederick W. White, Jr.'s search for understanding is over. He died on December 27 at a convalescent home in Mansfield, Conn., following a long illness. For 35 years he lived in Hamilton, Ontario, where he was production manager for the Fuller Brush Company, Ltd. of Canada. He served as a lieutenant in the Coast Artillery until 1920, joined Fuller, and moved back to Connecticut in 1961.—**F. Alexander Magoun**, Secretary, Jaffrey Center, N.H.

'19

Edward Richardson writes that his first half year of retirement has passed pleasantly. He says a smaller house would be desirable, but he has no plans to leave Bethlehem, Pa. He says he has a couple of books to write and some experiments to be made and reported. . . . **Frank Reynolds** and his wife have moved to Venice, Fla., where they have a co-operative apartment. He says they keep busy with golf, shuffleboard and helping to start a new Congregational Church. Before his retirement, he was with Bird and Son for 37 years. . . . **Lan Quick** writes that he is still working full time as purchasing engineer of Shook and Fletcher Supply Company in Birmingham, Ala. He and his wife took a motor trip this last fall through New England and part of Canada. . . . We are sorry to report the death of **Mason Noyes** on September 26, 1962, at his home in Washington, Ind.—**Eugene R. Smoley**, Secretary, 30 School Lane, Scarsdale, N.Y.

'20

Our far flung newsgathering network, Duxbury, Mass., division, comes up with the news that **G. Roger McNear** is win-

tering in Tucson; **Jack Kellar**, who is listed as '22, but whom we have always considered a member of our class, is keeping busy with his construction business in Newton and Duxbury, ably aided and abetted by his two sons; and **Ed Ryer's** winter hideout in Florida has been invaded by a renegade from the Class of '21, name of Mich Bawden. . . . **John W. Crowley, Jr.** is added to the sizable Florida contingent, address 299 River Drive, Tequesta, Jupiter. . . . **Stan Bragdon**, on the other hand, ruggedly transfers from South Milwaukee to Fryeburg, Maine. . . . **Jack Coyle** is another one that prefers to stay North. He has moved from Norwalk, Conn., to Norton, Mass. . . . When last seen, **Bob Patterson** was looking very smart in his stylish black caracul chapeau, highly appropriate for fending off the wintry blasts down Boylston Street. Also, when last seen, **Buck Clark** was vigorously sweeping the ice for Norfolk, Conn., Curling Club at a Winchester, Mass., Country Club bonspiel. Winchester beat Norfolk, of course. The Bugbee twins still prefer candlepin bowling as a winter sport and not long ago the twin that was secretary of the Winchester C.C.'s mixed bowling league as well as of his class, came up with the following observation: "Bowling is an old sport, a bold sport, a rolled sport. Curling is a cold sport." Any dissenters? **Al Burke**, we know, prefers strenuous indoor tennis. Have any of our classmates taken up the 50-mile walking fad?—**Harold Bugbee**, Secretary, 21 Everell Road, Winchester, Mass.

'21

It is a real treat to be able to report on the supper-dance arranged by the M.I.T. Club of New York at the Hotel Biltmore on January 24, 1963, to honor **Irving D. Jakobson** with the award of its ninth "Silver Stein" for his many outstanding contributions to Technology, the Club, the Class of 1921 and numerous civic and professional activities. A distinguished audience of Alumni and their wives, including a number of previous recipients of the honor award, heard **Raymond A. St. Laurent**, President of the Class of 1921, present Jake with a scroll and the handsomely engraved silver stein, following appropriate remarks which reviewed Jake's many activities and incorporated numerous congratulatory letters and telegrams. Toastmaster **Ira Kessler**, '46, had introduced **Harold F. Smiddy**, '20, President of the New York Club, who told of Jake's achievement as a former vice-president of the club and the organizer and current president of the Long Island Alumni of M.I.T. **Dean Gordon S. Brown**, '31, came from Cambridge to express the Institute's official congratulations. Also in the group representing Technology were **Donald P. Severance**, '38, and **Frederick G. Lehmann**, '51, respectively Executive Vice-President and Secretary of the Alumni Association, and **D. Hugh Darden**, Director of the M.I.T. Educational Council. Among the long distance tele-

phone callers were **Henry duPont Baldwin** of Baltimore and **H. W. McCurdy**, '22, of Seattle. Horace had previously written, in answer to Ray St. Laurent's letter to the Class of 1921: "It has been my privilege to know Jake as an intimate and devoted friend ever since those long ago days on the Charles when he was stroking the crew and I was rowing Number 7. For three years, I spent a large part of my time looking at the back of Jake's neck!"

For those who may not recall, the 1921 Technique observed that: "The spring of 1920 marked the establishment of the eight-oared crew as a permanent sport at M.I.T. The captain of this first varsity eight-oared crew is **Irving D. Jakobson**, '21. The manager of crew is **Edwin T. Steffian**, '21." . . . **Eugene A. Hardin** of Baton Rouge, La., wrote to Jake, in part: "I am one of those daring young men who tried out for crew in 1920-21 as coxswain, and couldn't swim. You may recall that day when a shell turned over and several non-swimmers were in trouble, after which all such were ruled out, thus ending my short crew career. But I will always remember how kind you were to me those first days, when I sat in front of you in the end of the shell and received the rudiments of how to perform as coxswain. I have regretted ever since that I missed further association with you on the crew because I was raised in Kansas where we had no water in which to learn to swim." **Dick Lee** of San Francisco queried Jake thus: "What new man put his foot through the bottom of the shell?" **Mel Jenney** assembled his thoughts into this verse: "Of all the guys at M.I.T., / The luckiest are such as we / Who are in the Class of '21 / With our classmate, **Irving Jakobson**. "As a student, he wasn't so much for books, / But he was always noted for masculine looks. / Ladies gasp when he appears, / For he keeps, in spite of advancing years, / His handsome masculinity, / Which is highly regarded in this vicinity. / But not only for beauty is he acclaimed; / For devotion to duty he's equally famed. Whenever the Institute wants to pry / Reluctant dollars from its Alumni, / Or whenever there's any job to be done / They call on,—guess who?—why, **Jakobson**. / They know our friend and classmate, **Irving**, / Is always smiling, helping, serving. / So to Twenty-Oners it isn't surprising / To see the Silver Stein recognizing, / By this program honorific, / One whom we think is really terrific." These are only a few excerpts from the heartwarming messages which were sent to Irv; we'll try to run portions of others in a later issue of The Review. . . . In a gracious acceptance of the award and a bound volume of the various communications from members of the Class of 1921 and many other well-wishers, Jake responded modestly, citing the date as one of the several most important in his life. He received a standing ovation. Among those present from the Class, besides **Irv** and **Ruth Jakobson**, were **Dayton** and **Mrs. Brown**, **Cac** and **Maxine Clarke**, **Munnie** and **Alex Hawes**, **Sumner** and **Betty Hayward**, **Gus Kinzel**, **Ray** and **Helen St. Laurent**. . . .

Alex and **Munnie Hawes** made Jake's honors night the pivotal occasion for a week in New York, seeing a different show every night and taking in other attractions during the daylight hours. . . . **Betty** and **Summer Hayward** were preparing for a trip to New Orleans to see the Mardi Gras festivities. . . . **Eddie** and **George Gokey** had to forego attendance at the Biltmore, since they left on the same day for a world cruise, to be gone until the end of April. . . . We hear that **Dave Woodbury** has been ill and hope that this finds him back to normal. . . . **Joe Gillson** and **Dan Barnard** both report trips to Europe. . . . **Ed McDonald** and **Joe Wenick** are spending winter vacations in Florida. **Larry Castonguay** of Manchester, Conn., says he has retired and is also spending the winter in Florida. . . . Admiral **Larry Richardson** reports a new address in care of Electric Autolite Company, 1350 Willow Road, Palo Alto, Calif. . . . General **John R. Hardin** is in Pakistan.

With Florida mentioned so frequently, perhaps California should be accorded equal space in order to maintain harmonious readership. To **Jack** and **Marge Kendall** of South Pasadena go our continuing thanks for a number of communications and some real lovely remembrances, a handsome appointment calendar, a complete set of U. S. A. and U. N. cacheted First Day Covers for the year of 1962 and inclusion on the mailing list for future issues. The promised 1962 annual report from "Margenjack" starts with a verse: "Three lovely things life gives me, / Whatever else fate sends; / My heart is filled with gratitude / For books and trees and friends." It continues, in part: "I don't know who wrote this little verse but it appeals to me, especially at this time of year, when we are thinking so often of our friends and wondering what kind of greeting to send. Pasadena welcomes the New Year as does no other city on earth and we had **Jack, Jr.**, **Shirley** and their three to help us celebrate. Later, **Bob** and **Angela** with their two paid us a visit. We took a two-month trip across the southern part of the United States, through Arizona, New Mexico, Texas, Louisiana, Mississippi and Georgia, along the Gulf coast and up the east coast of Florida, through the Carolinas and Virginia to Washington, D. C. Then back home, still through the South, adding Tennessee and Arkansas.

"Just before we got home, we received news that our sixth grandchild, **John Erwin**, had come to live with **Bob** and **Angela**. About the middle of June, we were off for a three-week trip, again mixing business with pleasure, to Portland, Seattle and the Fair. Then we drove to Spokane and into Canada to Lake Louise, Banff and Jasper National Park, returning via Vancouver." On New Year's, **Jack** was one of the 300 members of the Tournament of Roses Committee. He served on the Parade Operations Committee and, of course, raved about the afternoon game. His company, the **Bekins Van and Storage Company**, has come in for some unusual publicity on its notable advances in acquiring specially designed vans for worldwide ship-

ment and handling of delicate electronic gear. An issue of "GO Magazine" has a lengthy article which details the revolutionary Bekins "Dream Van" and its many novel advances, and carries a gorgeous cover picture in color, with a Bekins van traveling the coastal highway against a background of the blue Pacific. To make the most use of these new tools of the trade, Bekins operates an extensive school to train personnel and to develop specialized handling procedures. Moving of delicate equipment is now about 10 per cent of the total long distance operations." Although they are headquartered in Los Angeles, we are daily reminded of Bekins widespread activities by a huge advertising sign we pass on a main New Jersey highway near one of our own company locations. We received a surprise birthday card from Don Severance, '38, postmarked in Long Beach, Calif., just before the big rainstorm. Very welcome, of course, but most puzzling as to what the Executive Vice-President of the Alumni Association was up to in California to obtain personal records in that area! Guess the drinks are on us this time."

Several members of the class rendered signal service in connection with our request for help on Boy Scout activities of our local Eagle Rock Council by giving us the benefit of their experience. **Wallace T. Adams** of Armco Steel Corporation, Middletown, Ohio, Chairman of the Council Camping Committee of the Mound Builders Area Council, added to his helpful letter: "Don't believe I told you that I received my Silver Beaver last spring. My oldest boy is a scoutmaster in Ashland, Ky., and my daughter is an officer in the Girl Scout Council in this area. We now have a total of 12 grandchildren. Two are Boys Scouts and two are Girl Scouts. I recently completed a term as president of the Middletown Safety Council and I still continue my activity on both the state and local levels of the Ohio Society of Professional Engineers." Wally also advised that **James LeGrand**, who is with McGraw Construction Company in Middletown, is on an extended tour of Europe. . . . **Arthur R. Harvey** retired several years ago from the Gardner Board and Carton Company and divides his time between his cabin cruiser and his home in Middletown.

Thomas W. Bartram of St. Albans, W.Va., has retired from Monsanto Chemical Company. He is an executive board member of the Buckskin Council of the Boy Scouts in Charleston, W. Va. Tom also gave us considerable aid and added to his letter: "Not very far from you, in Metuchen, N. J., my eldest grandson, Roger Bartram is due to become a Star Scout. That was as far as his father went. It must give you satisfaction to have Alfred near you as a scoutmaster. To offset my lameness, I have spent most of my time in executive and advancement work. I had the pleasure of presiding at two boards of review for Eagle Scouts in the past two months and seeing six worthy boys passed. At present, I am district advancement chairman, although I have had just about all of the offices

in the past 38 years. I am on the executive board and have been given the Silver Beaver award. It so happens that I can show I was a Boy Scout in 1911. My daughter, Nancy, who attended Wellesley, is the wife of Dr. Norman Beecher, '44, Assistant Director of the National Research Corporation, and lives in Concord, Mass. Since we plan our next retirement tour at the end of March as a trip to Japan, I would like to know whether our classmate, Juntaro Kawai, of my Course V, is alive and still in Japan. Billie and I send New Year's greetings to you and Maxine." Juntaro Kawai still lives in Japan, as reported in recent notes in The Review from the M.I.T. Association of Japan. Dr. Kawai is a professor of chemistry at the Tokyo Metropolitan Junior University of Commerce in Tokyo.

Retired Scout Executive **William A. Collins** of the Taunton, Mass., Council, also wrote a welcome note. . . . G. Everett Farmer, our R.O.T.C. and S.A.T.C. bugler, who is now listed with 1922, contributed his help to our problem. Gef is chief of the Communications Branch of the T.V.A. in Chattanooga, Tenn. He wrote a cordial letter saying, in part: "I took over as scoutmaster in our community of Signal Mountain, Tenn., during the war, continuing for a number of years, and then went on through the District organization to the Executive Board of the Cherokee Area Council. I also received the Silver Beaver a number of years back. I am going to Quebec in January to give a paper before the Canadian Electrical Association and will then stop in New York to attend the I.E.E.E. meeting. This is my retirement year, in November, but I haven't had time to do much about it, only to think that I may then be able to catch up with myself." Sorry, we missed seeing Gef and Janet while they were in New York. We wish to express sincere thanks to Gef, Bill, Tom and Wally for their scouting help and their fine contributions to this column.

Assistant Class Secretary Ted Steffian writes: "Our classmate, **Glenn Stanton** senior member of the Portland, Ore., architectural firm of Stanton, Boles, Maguire and Church, has been honored by election as a fellow of the Royal Society of Arts of England. Glenn, who is a former national president of the American Institute of Architects, was also recently appointed to the national panel of the American Arbitration Association." Thanks, Ted, and congratulations to Glenn. . . . **G. Howard LeFevre**, Vice-president of the U. S. Smelting, Refining and Mining Company, writes: "As of February 1, we are moving the Metal Sales Department to our President's Department at 75 Federal Street (P. O. Box 2137), Boston 6, Mass. Practically all of the gang are going along with me. I expect to be back and forth to New York a great deal but mail has to have a home and Boston will be it." We will hope Moose manages to get to Alumni Day regularly now. . . . Colonel **Robert A. Hill** has moved from New Mexico to Apartment 322, 1600 Bayshore Drive, Miami, Florida. . . . **Edwin S. Lockwood** reports a slight change in his re-

tirement mailing address to: Route 2, Box 143, Salem, Va. . . . Semi-retired **Eugene W. Rudow** gives his new home address as 8457 N. E. 3rd Street, Bellevue, Wash. . . . Reminder: Attend Alumni Day on campus in Cambridge on Monday, June 10, 1963, and visit with your 1921 classmates. Meanwhile, a note on your new grandchildren, travels, retirement plans and activities will be welcomed by your secretaries.—**Carole A. Clarke**, Secretary, c/o International Electric Corporation, Route 17 and Garden State Parkway, Paramus, N. J.; **Edwin T. Steffian**, Assistant Secretary, c/o Edwin T. Steffian and Associates, 376 Boylston Street, Boston 16, Mass.

'22

In the merry, merry month of February, when all of us up north should be with **Frank Kurtz** down South, your secretary can only look at the beautiful beach scenes in the brochure of the Winanno Club with plans for our next reunion. However, Dean Gordon Brown, '31, will be in Buffalo shortly to address the annual banquet of the Buffalo Area Chamber of Commerce, which will make a bright spot at the end of the winter. . . . **Allen S. King**, President of Northern States Power Company, announced in the Wall Street Journal the construction of a \$30 million transmission line between Minneapolis and St. Louis. His company and six other Midwest utilities plan to link the upper Mississippi, Iowa and Illinois-Missouri power pools to cut operating expenses through lower required reserve generating capacity and more reliable service. . . . **Harvey Williams** announced his retirement from the Philco Corporation at the end of 1962. He was formerly president of Philco-International Corporation. He continues to be actively interested in the U. S. Council of the International Chamber of Commerce as chairman of its Committee on Commercial Policy; and in the Business Council of International Understanding of which he is chairman. . . . **Dr. Preston Robinson**, senior consultant to the Sprague Electric Company of North Adams, has been granted a basic patent covering solid electrolyte capacitors including tantalum, aluminum and niobium types. This brings to 103 the number of patents granted to Dr. Robinson, one of America's best known inventors. The capacitor invented by Dr. Robinson is self-healing, possessing the ability to restore itself to operating condition after its electrodes have been locally short-circuited.

Martha E. Munzer has had reviewed her book entitled "Unusual Careers." The McGraw-Hill Book Co. have also issued a flyer praising very highly her work with Dr. Brandwein, "Teaching Science through Conservation." This text has been received with enthusiasm by the staff of many colleges. She is also at work on another book to be published for teenagers. . . . **Val Friedrich, Jr.**, Manager of the Watervliet Paper Company, was honored in January by several

hundred employee and management personnel at the Watervliet Mill in recognition of his 40th anniversary in the paper industry. Mr. Friedrich joined Watervliet in 1960, after serving the Beckett Paper Company in Hamilton, Ohio for 37 years. The Hammermill Paper Company is now the parent corporation of both companies. Val was formerly vice-president in charge of manufacturing at Beckett where he began as a chemist and continued as assistant and general superintendent, later becoming a director and secretary. . . . Mrs. Katherine D. Thulman Bristol, widow of **Bob Thulman** has established the R. K. Thulman Student Aid Fund. Bob Thulman had many friends, and it is hoped that this fund might be increased through their generosity. . . . Many members of the class have sent clippings and expressed their sympathy regarding the death by heart attack last January of **Paul M. Phillips**, of 17 Andover Drive, Short Hills, N.J. Paul was a patent attorney and had been associated with the firm of Cooper, Dunham, Dearborn and Henninger in New York. He was a retired lieutenant colonel in the Army reserve and served on active duty in Panama during World War II. He was a member of the New York and New Jersey Patent Law Association and the American Bar Association. He was past president of the Cross Roads-Deerfield Civic Association in Millburn. . . . The sympathy of our class goes to Mrs. **Malcolm K. Sheppard** of Shaker Heights, Ohio, for the sudden death last June of her husband. Malcolm was one of the organizers of Growth Capital and a nationally known management consultant, having served as vice-president and director. He was the author of numerous articles on management subjects and is listed in both "Who's Who in Commerce and Industry" and "Who's Who in the Mid-West." . . . The sympathy of the class is also extended to the families of Captain **Charles H. Cushman** and **Laurance W. Kendrick**.

Among the new addresses received are the following: **John S. Williams**, Richmond, Va.; **Frank O. Rickers**, Jupiter, Fla.; **John C. Molinar**, Barre, Mass.; **Abbott L. Johnson**, 80 Warwick Road, Muncie, Ind.; **C. George Dandrow**, 10 Brooklands, Bronxville, N.Y.; **John O. Bower**, Shelburne, Nova Scotia; **George Erickson**, Elyria, Ohio; **Raymond S. Bond**, San Francisco, Calif. A good golfing spring to all!—**Whitworth Ferguson**, Secretary, 333 Ellicott Street, Buffalo 3, N.Y.; **Oscar H. Horovitz**, Assistant Secretary, 33 Island Street, Boston 19, Mass.

'23

Plans are now complete for our 40th Reunion to be held at the Chatham Bars Inn. You have been receiving notices concerning this important event as well as about Alumni Day at the Institute. What a fine opportunity to renew old friendships. Make your plans include both events; be with us for the 40th! . . . The Carnegie Foundation for the Advancement of Teaching elected Dr. Ju-

lius A. Stratton to their board of trustees. The Foundation was founded in 1905 by the late Andrew Carnegie for the primary purpose of providing pensions for retired college teachers and their widows. . . . Dr. **Per K. Frolich** was honored last November by fellow chemists of the North Jersey Section of the American Chemical Society at a meeting which presented gold lapel pins to 20 past chairmen of the North Jersey section. . . . **Chaplin Tyler** has retired after a varied career of 35 years with the DuPont Company. Mr. Tyler, who lives at 3209 Swarthmore Road, Wilmington, Del., has been in the Development Department since 1942 when he returned from the Remington Arms Company, Bridgeport, Conn., a DuPont subsidiary, where he had been public relations director. He was first associated with DuPont as a research chemist and research division head in the Ammonia Department from 1927 to 1934, and for two years was sales development manager of that department. He was assistant director of the Public Relations Department from 1936 until 1941. Before joining DuPont, Mr. Tyler was a research assistant and research associate at M.I.T. from 1920 to 1924 and assistant editor of 'Chemical & Metallurgical Engineering' for three years. He is the author of "Chemical Engineering Economics," published by McGraw-Hill, and has contributed numerous articles on chemical economy and allied subjects to various technical journals. He is the inventor or co-inventor of several products and processes in the chemical field and from 1946 to 1949 was a lecturer in chemical engineering at the University of Delaware Extension Division.

We regret to report the death of **Robert A. Brown** on January 13 in Scarsdale, N.Y. Mr. Brown was general appraisal engineer for the New York Telephone Company, which he joined in 1923 as an engineering assistant. Born in Luray, Va., Mr. Brown was a graduate of the Charlottesville High School and the University of Virginia. He received an M.S. degree in electrical engineering from the Institute. During World War I he served in the Students' Army Training Corps. Shortly after he joined the telephone company, from 1924 to 1926, he was an instructor in mathematics during evenings at the College of the City of New York. He later was an instructor in mathematics at New York University Evening Engineering School until 1932. Mr. Brown had lived in Scarsdale since 1933. He was a member of the Telephone Pioneers of America, the Scarsdale Town Club, the Shenorock Shore Club in Rye, N.Y., and Theta Tau engineering fraternity. . . . We regret to report the death of **Walton T. Davis**, a director of Ashland Oil and Refining Company of Louisville, Ky., in December, 1962. Mr. Davis was also president of the Aetna Oil Company.

We wish to report the following address changes: **Frederick H. Bush**, Apartado Postal 510, Cuernavaca Morelos, Mexico; **Harry P. Kelley**, 1301 Gilpin Avenue, Wilmington 6, Del.; **Louis A. Metz**, 1296 Hackberry Lane, Winnetka,

Ill.; **Albert S. Redway**, 17 Old Orchard Rd., North Haven, Conn.—**Herbert L. Hayden**, Secretary, E. I. duPont de Nemours and Company, Leominster, Mass.; **Albert S. Redway**, Assistant Secretary, 17 Old Orchard Road, North Haven, Conn.

'24

Don't know whether our usual winter vacationers have changed their habits or whether they've forgotten to send post cards, but the only one recently is from **Carroll Dunn**. This year the Dunns are circumnavigating South America on the 'M. S. Gripsholm.' Starting at the canal they went down the west coast, through the Straits of Magellan, back up the east coast to Barbados and the Virgin Islands. When Carroll wrote they were about to land in Santiago, Chile. "Smooth trip so far. Hot in Panama, cool in Peru." Wonder what it was like going through the Straits. . . . If Carroll had known about it in advance, he might have had a chance to call on **Tony Rosado, Jr.** According to word from the I. T. & T. office in New York, relayed through **Paul Cardinal**, Tony has gone down to their office in Lima, Peru. He will undoubtedly have one visitor soon. The **G. Raymond Lehrers** are also touring South America, but in much more of a hurry. They left by plane in late January. They won't see all the coastline that the Dunns will, but on the other hand they will get up to Brasilia and other places in the interior. Ray, by the way, has taken on the job of reunion gift chairman left vacant by the death of **Frank Barrett**. You will be hearing from him shortly after his return. In case you've forgotten, our 40th Reunion is only a little more than a year away.

Two of our military men have picked retirement spots far removed from one another. Colonel **Walt Kennett** has left Maine to come back home to West Newbury, Mass., where he was born. And General **Frank McSherry** has left Massachusetts for the sunny slopes of Woodland Hills, Calif. . . . Your secretary was startled recently to receive a clipping of the marriage of Miss Sarah Worthington, daughter of Mr. and Mrs. **Hood Worthington** of Wilmington, and Mr. Peter Greening of Rustington, Sussex, England. The bride is a graduate of Connecticut College; the groom, of Cambridge University. After a wedding trip to Kenya they will live in Northern Rhodesia. There was nothing startling in all this, even a Kenya honeymoon. It was the accompanying photograph that did it. Sarah bore a striking resemblance to her father when he was the "premiere danseuse" of Tech Show. If her veil had been black instead of white, she would have made a perfect Serafina.

The **Russell Ambachs** spent Christmas in Washington with their son and his family. While there Russ looked up his fellow civil engineer, **Luang Videt-Yontrakich** at the Royal Thai Embassy, and as a consequence, the Ambachs and the Videts dined together one night. A

most enjoyable evening, was the report. Two other items of interest in the Am-bach household; their second son, Gordon, was married this winter, and Russ has been made a deacon of his church. . . . Did you see the TIME piece in mid-January, "Puerto Rico's Brother Act?" All about **Luis Ferré** and his brothers José and Herman, '31. It started off: "This is the palmy time of year in Puerto Rico, when fugitives from the mainland crowd the island's modernistic concrete hotels, hoping to warm their bones and tan their hides. Virtually every dollar the tourists spend somehow turns a profit for three forceful brothers named Ferré (rhymes with beret)." In describing the division of responsibilities it says: "Reflective Luis, 58, who studied mechanical engineering at M.I.T., is the organizer, labor relations chief and, as leader of Puerto Rico's Republican Party, the family politician." And a note on one of Luis' hobbies; "Luis, a passionate art collector, recently engaged architect Edward D. Stone, '27, to design a new home for Puerto Rico's solitary—and Ferré-financed—art museum."

There is sorry news of **Anatole Gruehr** to report. He had been despondent for some weeks because of a heart condition and on January 17 committed suicide with a .45 caliber automatic. Anatole was born in Turkey of Swiss parents. He got his early education in Zurich before coming here in 1921. His bachelor's was in electrical engineering, but he went on to get a masters' in business administration and a doctorate in philosophy and economics. After many years with Consolidated Edison in New York, he retired in 1955 as chief systems engineer and immediately became chairman of the Department of History and Economics at Brooklyn Polytech. He was about to retire from that post. Anatole had been active in sports and was an experienced mountain climber. Possibly a future life of relative inactivity was more than he could stand. To Mrs. Gruehr and to their son and daughters goes the sympathy of the class.

Another New Jersey classmate, **Augustus B. Rudd Jr.**, of Summit died on February 9 after a long illness. Since graduation he had been with the American Telephone and Telegraph Company, in late years as a supervisor accountant in New York. . . . When you read this column, spring will be in the air. I hope next month I shall be able to end on a less sombre note, something more in keeping with the season.—**Henry B. Kane**, Secretary, Room 1-272, M.I.T., Cambridge 39, Mass.

'25

Several months ago, a plea was made for a few letters from members of the class, particularly those who have not been heard from; and to date, one reply to this request has been received. I should hope this is not considered par for the course! . . . **Henry Sachs**, whose headquarters are in New York City, sent me a most interesting letter, noting that

outside of his insurance business, since he retired from the U. S. Army Reserve Corps after some 30 odd years of service, he had been spending considerable time in social work. He is doing such a fine job in an extremely important field that I think you should hear it in Henry's own words, and so I shall quote from his letter: "My particular interest is recruiting and training professional social workers. There is a tremendous manpower shortage in this field which is becoming increasingly important for our national well-being. I got interested as a trustee (I am now secretary of the board) of the Educational Alliance, one of the oldest settlement houses in the country, which is located on the lower East Side of Manhattan. Professional social workers are required to have a master's degree and $\frac{2}{3}$ of each of two years of study are spent in field work, a sort of closely supervised internship, at a qualified social agency. The Educational Alliance has over 20 such students each year, representing many nationalities, creeds and colors. (In fact, this is by far the largest unit in any group work agency.) This has been one of my major responsibilities as a board member. Following through on the recruitment of young dedicated people for this profession has brought me in contact with the Federation of Jewish Philanthropies of New York and the National Jewish Welfare Board, with both of whom the Alliance is affiliated. I head recruitment and scholarship committees in both these agencies and am a director of the latter. I am also a member of the executive board of the Social Work Recruitment Committee of Greater New York, the largest regional one in the country. Last year, I received the Blanche Ittleson Gold Medal, a reward for individuals who have excelled in the recruitment efforts. On a national basis, I am chairman of the National Citizens Committee for Careers in Social Work which is affiliated with the Council on Social Work Education; it is here that I devote my major effort. Last year there was formed a National Commission for Social Work Careers. It has 18 members, 2 of whom are lay people; I am one of them. So, if anybody in our class knows of youngsters interested in this field, please tell them to contact me, and I'll see to it that they get the real information." Henry's wife is also active, being president of the Hudson Guild Neighborhood House, as well as having membership on several other social work boards. They are planning shortly to take a trip through Asia where they will do much sight-seeing by plane as well as to visit some schools of social work in a number of the Asian countries. Henry also noted that some two years ago he and his wife took a river steamer up the Nile River as far as Abu Simbal and found that it was quite an experience, something like "Grand Hotel!"

During the past month, **Chip Chippendale** dropped in on me and we had a most enjoyable lunch together and a bull session afterwards. Chip is enjoying retirement at his home in Litchfield, Conn. . . . A recent issue of the "Journal of the Engineering Societies of New Eng-

land" noted that **Willard Allphin**, who is with the Sylvania Electric Products, was speaking at a meeting of the Illuminating Engineering Society, New England Section, on the subject: "What's Wrong with this Picture."—**F. L. Foster**, Secretary, Room 5-105, M.I.T., Cambridge 39, Mass.

'26

This Sunday morning does not find us at Pigeon Cove, yet, but it's a beautiful zero-degree day, the Volvo has a wonderful heater built for Swedish winters and it is only a one-hour drive. Meanwhile let's dig into the folder. The item on top is one about Jim that I clipped from last night's newspaper. "Dr. **James R. Killian, Jr.**, Corporation Chairman of the Massachusetts Institute of Technology, yesterday was elected a director of the American Telephone and Telegraph Co." And another older clipping: "The appointment of Dr. James R. Killian, Jr. as a trustee of Mount Holyoke College was announced Saturday." Jim's activities have become extremely diverse, but if I were to guess, after hearing him address the last Alumni Council meeting, education is one that is closest to his heart. He told us of work initiated at M.I.T. several years ago that appears to have the tremendous potential of revolutionizing teaching methods, at least in the scientific field. After his inspiring talk Jim showed part of a movie that teaches elements of physics in a way that I could understand and freshman physics still remains a dim nightmare to me. It is easy to see how Jim can be so dedicated to such an objective. This was the first time I had seen Jim since his hospitalization a few months ago; he is fully recovered and looks wonderful. . . . A postcard arrived a few days ago from that world traveller, **Earl Lissner**. He said he had a touch of the flu so his wife set up this little trip to Portugal and he ends up: "The fruit trees are in bloom, wish you and Heidi were here." Imagine what I am muttering as I move my chair away from a draughty window.

The other evening Ruth and I had dinner with **Pink** and **Mary Salmon** at their place in Hingham. While Pink and I get together for lunch frequently, we live northwest and southwest of Boston, respectively, so we do not get together at our homes often. I don't believe Pink has ever been out to Pigeon Cove. In addition to Pink's daiquiris and the steak, which was 50 millimeters thick, we had a pleasant evening at Pink's charming New England home. Both of his sons are away after having graduated from the Institute. Billy is with the State Department in Washington and Bogie, '62, is with Bethlehem Steel at Bethlehem in a training course. . . . **Elton Staples** recently sent us a letter that he received from classmate **H. Y. Lo** in Taiwan. I want to give you as much of H. Y.'s correspondence as possible so will save it for next month (with class notes being due last Friday, I'm cutting down a bit hoping they will get in O.K. Probably every other class

secretary is doing the same). I'll just quote the last paragraph of Elton's letter. (Elton is President of Hevi-Duty at Watertown, Wis.): "As for myself, we still manage to keep busy and pay the bills. You may have seen the recent announcements of the acquisition by Basic Products Corporation of Lindberg Engineering Company. This will add appreciably to the international activity and completely round out the heating equipment engineering and manufacturing facilities of the corporation. I hope all is well with you, and Miriam joins me in sending our best to you and Ruth. Sincerely, Elton." . . . We did get out to Pigeon Cove, it really was beautiful in spite of the cold. The kids were skating on our quarry pit, the cronies were huddled around the fireplace at the Yacht Club and a few hardy lobstermen were out handling their pots. We turned up the thermostat and spent a couple of hours at the house, picked up a few lobsters, drove by a couple of interesting new houses that are being built and headed home. We'll get these notes into the mail tomorrow, hoping to make the April issue.—**George W. Smith**, Secretary, E. I. duPont Company, 140 Federal Street, Boston, Mass.

'27

Dick Hawkins and **Glenn Jackson**, Class Agents for the Alumni Fund, say: "Bolster M.I.T. at a time when it is more vital to the future of this country than ever before!" Those of you who made a down payment to attend the 35th Reunion but were unable to attend, will soon hear of the decision of the committee on the disposition of these funds. It has become a federal case, but is under study. . . . **George Houston's** book, "Manager Development: Principles and Perspectives" (see May, 1962 Notes), has been selected for a McKinsey Foundation Book award as one of the five best management books published in 1961-62, under the Academy of Management Program for the recognition of outstanding management books. It is published by Richard D. Irwin, Inc. at Homewood, Ill. . . . For years, **Harry Franks** has checked in as an officer of clothing companies in the Boston area. Then along came reference to mining companies of which he was an officer. Now the Lawrence press refers to Harry as president of Maser Optics, Inc., 89 Brighton Avenue, Boston 34.

In 1960, these notes referred to the fact that **Joe Melhado** was secretary of the Westchester Symphony Orchestra, Inc., and was nominated for a vice-presidency. Today, Joe is president of this august body. Joe, Jr. (M.I.T. '61) is with RCA in New York; daughter Jane works for the M.I.T. Center for International Studies, while her husband is at the M.I.T. Graduate School for Industrial Management. . . . **George N. Fairbanks'** mother has reported his death to the Institute. It occurred on December 25, 1961. George lived in Keene, N.H., where he formerly worked for Ellis Brothers and Company. . . . In the July notes it was recorded

that your secretary was about to come back to work "in a couple of weeks." It didn't work out that way. In fact, since then I have taken a not-so-early retirement from the Shell company. We have moved into a house we've had for a few years at Mystic, Conn., and for the time being will concentrate on retirement-type activities. Actually, my health is much better and, hopefully, will soon be back to normal. It was an extra-heavy virus. One of the things that will be pleasant to do is the monthly writing of the class notes. Anyway, it looks that way to me today. Before taking leave of the old system, in which I received substantial help from my secretary, I want to thank Miss Isabel F. Cook on behalf of the class for the wonderful assistance she has given during the past three years in preparing the notes each month. Especially during the past year, when I was hospitalized, Miss Cook did the job practically single-handed. . . . One thing that I need, in doing the class secretary job, is a Class of 1927 Freshman Grey Book. Would any member like to make me a permanent loan of this item? Also, I could use the 1924, 1925, and 1926 Techniques!—**J. S. Harris**, Secretary, Masons Island, Mystic, Conn.

'28

Here it is only the middle of February and already a total of 120 registrants (mostly classmates and wives) have signed up for the reunion in June. Many are coming who have never been to a '28 reunion before. There can be no question about it—we have a wonderful 35-year anniversary party assured! Nearly everyone heard from has written a few words of personal news to **Jim Donovan**. The earliest of these replies form the basis of our notes for this issue. . . . **Elbridge Atwood** reports that he is still practicing metallurgical and materials engineering for the U.S. Navy and enjoying it. He has a daughter who is raising him a fine grandson; his son was graduated last June from Northwestern University with an MBA in marketing. . . . **Allan Gwathmey** is professor of chemistry at the University of Virginia where he is active in surface chemistry research, especially the chemical properties of large metal crystals. Allan is also president of the board of trustees of the Virginia Institute for Scientific Research. . . . **Tom Wood**, who is vice-president and director of purchases for Corning Glass Works at Corning, N. Y., has only one wish—more time in a busy and interesting life to study world problems and to renew his many friendships. . . . **Carl Feldman**, who is presently with Allis-Chalmers, reports that he is planning on re-establishing himself in private consulting work in an office in Boston. His specialty is lighting, air conditioning, power distributing, and high voltage engineering. . . . **Ben Hough** also has his own busy practice—in soils and foundation engineering. At the time of his writing (January 17) he was engaged in an assignment in Puerto Rico. . . . **John**

Houpis says he is still going strong and looking forward to the weekend at Harwichport. He is engaged in electronic engineering and a staff member of the R&D Directorate of the U.S. Army Electronics Command at Fort Monmouth, N. J. . . . **Des Shipley**, who flies jetliners for American Airlines, held the unofficial jet transport speed record between Chicago and San Francisco until it was broken by the advent of fan turbines. . . . From **Jack Rouleau**, we learn that he returned in 1961 from Paris where he was the U.S. Atomic Energy Commission scientific representative for Europe. Now Jack is a science officer in the Office of International Scientific Affairs concerned with Latin America and French-speaking countries in Africa. The Office of International Scientific Affairs was formerly known as Office of the Scientific Advisor and was headed by Walt Whitman, '17, of M.I.T., Department of Chemical Engineering. . . . **Slim Maeser** has been selected to give the John Arthur Wilson Memorial Lecture at the annual meeting of the American Leather Chemists Association in June. Preparation of the lecture is taking most of Slim's spare time. However, he does not expect that this will interfere with his attendance at the reunion. . . . **Ed Walton** reports that he has had his own industrial consultant business for the last 10 years. Ed's daughter, Harriet, was graduated from the University of North Carolina in 1961 and is now married and has a daughter of her own. Ed, Jr. was graduated from Saint Lawrence University last year.

We regret to report that **John A. Grant**, Course V, died very suddenly of a heart attack on December 8, 1962. Jack had been looking forward to attending the 35th Reunion with his wife, Alberta. He was also planning to celebrate completion of his 35th year with his company, Owens-Corning Fiberglas Corporation, in June. This information was sent to us by Mrs. Grant.—**Walter J. Smith**, Assistant Secretary, 15 Acorn Park, Cambridge, Mass.; **George I. Chatfield**, Secretary, WFGM Radio Station, 170 Pritchard Street, Fitchburg, Mass.

'30

Reports that we have received the last year or two suggest that there may be a developing tendency on the part of our classmates to move from industrial jobs into educational and non-industrial research activities. The latest to move in this direction is **Charley Dwight**, who is scheduled to head the new Research Institute of the University of Hartford. Charley was formerly secretary of the Hartford Electric Light Company, for which he had worked since graduation from M.I.T. . . . **Hank Luykx** is chief of the Biometrics Division at USAF Headquarters in Washington where he is concerned with such matters as co-ordinating data automation for the USAF medical service. He has three children: Peter, who is married and doing graduate work in biology at the University of California, Berkeley; Elizabeth, who is a stu-

dent at Green Mountain College in Vermont; and John, who is a student at Sidwell Friends School in Washington. Hank says that about a year ago he took a Brookings Institution course in Williamsburg, Va., with **John Parmakian**, who is working for the U. S. Department of the Interior in Denver. John reports contentedly that he "has his daughters safely married off to school teachers." . . . **Lauri Lindell** is a fellow of the Society of Registered Architects and practices architecture in the Boston area. He and his family live in Lexington, where his two daughters are in high school. He is a member of the Lexington Town Meeting and a past vice-president and president of the Boston Chapter of the Finlandia Foundation. Several years ago he did some graduate work at Harvard which led to a degree of Adjunct in Arts. . . . **Roy Ide** is head of the Science Department at Mitchell College in Statesville, N.C. He has two married daughters, three grandchildren, and a son, Roy, III, who is a freshman at U. of Va. Law School. . . . The Silver Stein Award dinner of the M.I.T. Club of N. Y., reported in the February Review, was attended by only one member of the class of '30—guess who?—**Gordon K. Lister**, Secretary, 530 Fifth Avenue, New York 36, N.Y.; **Ralph W. Peters**, Assistant Secretary, 68 Village Lane, Rochester 10, N.Y.; **Louise Hall**, Assistant Secretary, Box 6636, College Station, Durham, N.C.

'31

It was a pleasure to see **Leon A. Fraikin** at a recent class luncheon at the M.I.T. Club in New York. Leon spends about half his time in New York and the rest in Montreal and tells me he has a daughter and son-in-law in Paris, a son in Jerusalem, and another son in Canada. In addition, he's a proud grandfather, with a grandson of three years and a one-year-old granddaughter. . . . Another welcome newcomer at the class luncheon was **Cliff Walker**, who has one daughter, 16. **Marcel Aillery**, Chairman of the '31 Class Luncheons, is doing a bang-up job and the luncheons are becoming more and more popular, so if you are in New York on the third Monday of each month, do join us. The address is the M.I.T. Club, Biltmore Hotel, Madison Avenue, New York. . . . **Don Sinclair** made the headlines again when he spoke at the PGEM-Engineering Management meeting in Waltham on January 9. His subject was "Partnership Concept—Key to Professional Development."

And, now, it is my sad duty to report the death of **George E. Carter, Jr.**, 54, of 4 Puritan Road, Danvers, Mass. George was a well-known industrial executive who was extremely active in civic affairs, and was manager of production control at the Bomac Division of Varian Associates. He leaves his wife, Theresa M. (McCarthy); two sons, George E. Carter, 3d, and Lieutenant James J., USA; a brother Elder Eugene P. Carter and a sister Mrs. Katherine B. Armeson of Dennisport. Roland Hanson,

'35, wrote that George came to work in the morning, was stricken while in the office, and passed away shortly after reaching the hospital.

New addresses reported since your last notes include **Dr. Gilbert B. Ayres**, 31 Colonial Drive, Wyckoff, N.J.; **Col. Ellsworth B. Downing**, Arkansas Irrigation Company, P. O. Box 151, Stuttgart, Ark.; **Percival B. Elbaum**, Florida Metal Engineering and Tool Corporation, 2132 East Oakland Boulevard, Fort Lauderdale, Fla.; **Myrtle M. Perkins**, Apt. 4C, 1056 5th Avenue, New York 28, N.Y.; and **Leslie H. Reed**, 29 Franklin Street, Box 327, Greenfield, Mass.—**Edwin S. Worden**, Secretary, 35 Minute Man Hill, Westport, Conn.; **Gordon Speedie**, Assistant Secretary, 90 Falmouth Road, Arlington 74, Mass.

'32

Col. James E. Harper, Jr., Course XVII, whose current Army assignment is with the Industrial College of the Armed Forces in Washington, D. C., has really dug into the Washington area and sends in some very interesting information on members of the Class of '32 whose accomplishments have been notable and whose travels, in many cases, have been interesting and important. But first, some data on Jim himself and his travels: "I'll be in Tulsa, Okla., for one of our normal two-week speaking engagements for the last half of February, and then go to Alaska for a short speaking tour early in March. I served in Alaska from 1954 to 1957, and will be able to resume my acquaintance with the seven ski tows at Arctic Valley, Fort Richardson, Alaska. In April, we have a two weeks' seminar at Sioux Falls, S.D., and in May close the 1962-1963 curricular year with a two weeks' stand at Missoula, Mont. All four services are represented on our six officer team. Our 32 one-hour lecture topics directly concern our national security and survival, and are a condensation of the ten months' course given to 175 regular officers here in Washington, D. C. at our Industrial College of the Armed Forces. This is my second year on this lecture circuit. I'll still be with the college for the 1963-1964 season but in a slightly different and interesting capacity. Will tell you about it next time." He writes that he will carry the Alumni Directory around with him, so expect to hear more. And he sends the following news from the Washington Area. **Neil A. Connor**, Course IV, is director of Architectural Standards for the Federal Housing Administration, Washington, D. C. Last fall he represented the American Institute of Architects at a meeting in Madrid, Spain, of the International Union of Architects. He also visited antique monuments that will be inundated by the new Aswan Dam in Egypt, as part of an international architectural survey to determine what measures can be taken to move these monuments. . . . **Angelo F. Ghiglione**, Course I., after constructing roads in Alaska for 25 years, and rising to the position of director of the Alaska Road Commission,

moved to Washington, D. C., soon after Alaska became a state and is now deputy director of operations in the Bureau of Public Roads. In May, 1963, he will attend a meeting of the Pan American Highway Congress, probably in Rio de Janeiro, Brazil. . . . **John W. Flatley**, Course XVII, had been with the General Services Administration in D. C. for many years, and has now risen to the position of assistant commissioner for transportation and communication services, General Services Administration. . . . **Ralph W. Crary**, Course X-A., is the eastern representative in Washington, D. C., for California Research, a subsidiary of the Standard Oil Company of California. His task is co-operating with the government in petrochemical research matters. . . . **John A. Robertson**, Course XVII, has been with the U.S. Gypsum Company in research work for several years, in Illinois. He is now moving to Washington, D. C., as director of technical services for U.S. Gypsum. He has six children, but the family support load lightens—one boy has finished college and one daughter is getting married.

To keep this month's column from being a strictly D. C. clambake I will print that list of class members who are working on M.I.T. Alumni affairs. And this covers quite an area. The Educational Council of the Institute, whose basic responsibilities are to maintain relationships with local secondary schools and to interview prospective students, enlists the services of **Gaynor H. Langsdorf** in San Francisco; **Harold A. Traver** in Darien, Conn.; and **Harry L. Moore, Jr.** in Greenwich, Conn.; **Donald W. Brookfield** in Sharon, Mass.; **William A. Kirkpatrick** in Kalamazoo, Mich.; **Otway W. Rash** in St. Louis, Mo.; **Lewis Fussell, Jr.** in Las Vegas, Nev. (he works for E. G. and G.); **Lawrence F. Wagner** in Toms River, N. J.; **Frederick F. Alexander, Jr.** in Albuquerque, N. M.; **Carl H. Bunker** and **Edwin H. McCormick** in Buffalo, N. Y.; **Meir H. Degani** in N. Y. C.; **Alfred A. Mulliken** in Pelham, N. Y.; **John D. Northrup** in Toledo, Ohio; **Eugene B. McBride** in Warminster, Pa.; **William H. Barker** in Warwick, R. I.; **T. H. Jenkins** in Houston, Texas; **Christian E. Grosser** in Richmond, Va.; **Kenneth H. Klapp** in Spokane, Wash., and **Juan Serrallach-Julia** in Barcelona, Spain. This list shows an interest in M.I.T.'s future of which the class can be proud.

The M.I.T. Alumni Fund Class Agents are, of course, **William B. Pearce**, Sharon, Mass., and **George W. Falk**, Leominster, Mass.; and among M.I.T. Alumni Fund regional solicitors are **Harold R. Tonsing**, Weymouth, Mass.; and **Christian E. Grosser**, Richmond, Va. In addition we have the following representatives in the Alumni Council (meeting in Boston): **Thomas E. Sears**, **William B. Pearce**, **Elwood W. Schafer**, **William H. Barker**, and **Gaynor Langsdorf**. And to complete the participation of '32'ers in Alumni Affairs are Alumni Term Members of the Corporation, **Robert B. Semple** and **Bennett Archambault** and vice-president of the Alumni Association **Carroll L. Wilson**. Just thumbing through the '62-'63 Directory and not bothering with statistics, this

isn't a bad class representation in M.I.T. affairs.—**Elwood W. Schafer**, Secretary, Room 10-318, Ext. 621, M.I.T., Cambridge 39, Mass.

'33

Looking back 30 years brings all kinds of thoughts—but let's look ahead for the moment to next June and our 30th reunion. Knowing **Ed Goodridge**, he will have a surprise a minute, day and night, at the Nautilus in Woods Hole, and you'll enjoy every second of it. Absolutely no fund raising either! Ed is putting into the reunion the energy, imagination, and enthusiasm that has characterized everything he has done. So, send back that questionnaire and start making travel plans. Don't forget to include Alumni Day on Monday, June 10, in Cambridge; this will give you a chance to see those in adjacent classes whom you haven't seen for a coon's age.

Honors of the month go to **Outerbridge Horsey**, recently appointed U. S. Ambassador to Prague. "Outer" has been serving the cause of your United States for 25 years—and there's scarcely a good bar in any principal capital of the world that he hasn't graced (see the 25th reunion yearbook for evidence in Tokyo). He is the sixth in his family to have the same first name; "my son is the unhappy seventh," says Outerbridge. . . . We offer congratulations, too, to five other distinguished associates for moving into "vice-presidencies," and let's take them alphabetically: **William B. Adams, Jr.**, Vice-president in charge of production for the John E. Cain Company, in Cambridge, manufacturer of mayonnaise, potato chips and pickles, and when Ed Goodridge learns this, Bill will be in charge of menus for the reunion. . . . **T. Gorman Byrne**, promoted from commander to captain in the U. S. Coast Guard, is stationed in Seattle. We'll need somebody at Woods Hole to maintain order when **Dick Morse** and **Fred Murphy** start racing their boats at midnight. . . . **Bob Heggie** has new and wider responsibilities as vice-president, Applied Sciences, of the Warner-Lambert Research Institute. Bob will continue as executive vice-president of American Chicle, now a division of Warner-Lambert; he will be on duty 24 hours a day at reunion from gums to liniment. . . . **Gil King** has transferred his affiliation from IBM and is now vice-president and director of research for Itek here in the Boston area. . . . Alphabetically last, but by no means least, we report that **Max Millard** is now administrative vice-president, commercial, for U. S. Steel. Max has held many chairs in the U. S. Steel complex.

For special mention, we have saved **William D. Harper, Jr.**, who just wrote indicating that he will become dean of the Texas Chiropractic College this fall. We happened on a publication that describes Bill aptly as, "educator, author, and convention speaker." He has two speaking dates in June but plans to be at our reunion. When Ed Goodridge reads this, he will have Bill in charge of

the Aches and Pains Committee to minister to those who think they can do now all the things they did 30 years ago. Anyone for tennis? Don't forget to send in the questionnaire; you don't need a doctor or a dean to help you sign your name.—**R. M. Kimball**, Secretary, Room 7-206, M.I.T., Cambridge 39, Mass.

'34

It was good to hear from **Charlie Finigan**, who now lives at 2040 Summerland Avenue in Winter Park, Fla. He is manager of communications, advanced technology staff, for the Martin Company. Previously he was chief engineer for the Sperry Piedmont Company. Charlie writes that they have four daughters—23, 21, 19 and 15. During Christmas the 21-year-old was married and now lives in Texas. The oldest is a computer programmer for Aetna in Hartford. Charlie says he does a little flying as a hobby, but that he has not done any ham radio for quite some time. . . . **Rudy Churchill** and his wife were looking forward to taking a long and leisurely cruise this winter to Buenos Aires. However, the dock strike interfered so they had to settle for a less ambitious cruise in the West Indies. . . . **Dr. Joseph Kaye** died two years ago, but the company he founded in Cambridge carries on the tradition of accomplishment of its founder and first president. Joseph Kaye and Company, Inc., has brought out an "Automatic Ice Bath," with multi-channel ice-point thermocouple reference systems with a capability of referencing up to 32 points simultaneously. The thermocouples are in a sealed chamber, maintained at zero degrees centigrade automatically and indefinitely by thermoelectric cooling of the ice-water mixture. This ice bath seems to be such a fine advance that it will surely contribute to advances in science and industry and, we hope, to the well-being of Joe's wife and four children.

Our class agent, **Phil Kron**, puts us all to shame by his energy and loyalty. This energy is not usually found in grandfathers with two of three sons married. One is a lieutenant in Walter Reed Hospital with the Medical Corps in Washington. The other is a student in Geneseo State Teachers College. The third son won the top all-around award for boys last June, and studies piano at the Eastman School where **Ray Jewett's** son considered going before he decided instead on Penn State. Phil Kron wrote a lengthy letter (what energy! what shame to those who write nothing!) which described the snow. He insinuated that his letter might not be delivered until the spring thaw. He writes in part: **Harold Thayer** and his wife Eleanor were in Rochester for the unhappy occasion of his mother's funeral. Dr. Helen Thayer Coomber was a well known, highly respected and greatly loved osteopath. Harold, being an only child, had many responsibilities to his friends and still had to handle his many duties as head of one of our large and important chemical companies. That he did everything with such ease and grace proved to

me that Mallinckrodt Chemical Company is fortunate to have him as its president, and we to have him in our class. . . . The rest of the Rochester '34ers are doing fine. **Roy Thompson** and I continue to apply our talents to the problems at Eastman Kodak. Roy is at the Apparatus and Optical Division while I'm at Kodak Park. My primary responsibility is the purchase of silver which is a commodity much in the news these days because consumption exceeds production and such a situation is unique in our economy. **Pete Barry** is no longer mayor of Rochester, but he led the GOP ticket in last fall's election, so he's still on the city council and watch dog for the minority. . . . **Rex Murdock** handles retail sales for Texaco out of Buffalo and lives in East Aurora. . . . **Wally Bird** seems to have recently been to Europe and made sales there of his Birdair Structures. His business continues to prosper and it couldn't happen to a nicer guy.—**James Eder**, Secretary, 1 Lockwood Road, Riverside, Conn.; **G. K. Crosby**, Secretary, 44 Deepwood Road, Darien, Conn.; **H. E. Thayer**, Secretary, 415 W. Jackson Road, Webster Groves 19, Mo.; **Malcolm S. Stevens**, Secretary, 9 Glenfield Rd., Barrington, R.I.

'35

All golfers who have not received their entry form from the Class Golf Tournament Committee and wish to participate in the third annual competition for the President's Cup should contact the secretary immediately. I think **Stocky** would appreciate it if I passed along to you part of his letter to **Gerry Golden** in which he acknowledged receipt of the gift from the class: "The thoughtfulness and generosity of my classmates in sending me the beautiful inscribed photo of Tech will always be appreciated. It is on my office wall and reminds me not only of our four years together as students, but of my subsequent 22 years there as graduate student and staff member. To all the class, my sincere thanks."

John Kiker sent along a copy of his Christmas letter from his home at 520 S. W. 28th Street, Golfview, Gainesville, Fla.: "It has been five years since we have sent separate messages with our Christmas cards and eleven years since the last family photo. Last year we did not send cards, and this will probably be our "sign off" for awhile. That is, unless the pressure lets up, and with the new trimester system in effect at the University there does not seem to be much hope. (Trimonster System it has been aptly called by some students.) As can be seen from the enclosed excuse for a photo, the whole Kiker family is enjoying good health. Mary has been kept busy, mostly with the girls until Joan left for college three months ago. Mary is now planning on a trip to Europe this summer, from July 1 until early in August. "Joan, 18, is a freshman at Agnes Scott and is doing well; majoring in math but interested also in physics, apparently because of a superior teacher in

that subject. Scholastically, she ranked Number 7 among 350 seniors at Gainesville High School last year. Affectionately, she ranks Number 1 with me.

"Carol is a senior at Gainesville High School this year. She hopes to enter the University of Florida next year and to major in education. She was 17 on Christmas day and she is also a solid citizen although she sometimes seems to think she can pull the wool over her daddy's eyes. . . . Ewing is 12 and is in the 7th grade. He is a B student and has a golf handicap of 17; as compared with mine of 19. Playing together last summer, we managed to get in from 9 to 18 holes almost every evening after dinner. It was the most enjoyable summer I have ever spent.

"Right now, I am following the same old school-year schedule, with office hours generally from 8 A.M. to 11 P.M. There still seems to be so much to be done with so little time to do it in and I have taken only three days vacation in the last five years. But I would not swap jobs with anyone, and to me Gainesville, Fla., is still the best place on earth in which to live, in spite of this new Trimonster System. One of the things that makes life here so enjoyable is the pleasure of receiving Season's Greetings from the fond friends to whom this message is being sent, hence we earnestly hope you will keep us on your list even though there may be a lapse in maintaining ours." Many thanks, John, and I can vouch that the photo shows a very happy, healthy, and good-looking family.

Ned Collins has been hard at work in the Midwest and has sent along a number of letters from our classmates. **George Platt** who lives at 601 North 6th Street, Manitowoc, Wis., wrote to Ned as follows: "I have before me your letter of January 22 asking personal information as to my activities since my time at M.I.T. I should state that I attended M.I.T. for just one year and that, as a consequence, my friends there are few and are confined almost completely to my own fraternity associates at Delta Tau Delta. However, I shall endeavor to fill you in a bit: After leaving school, I worked continuously for the Paragon Electric Company, becoming president in 1959, negotiating a merger with American Machine and Foundry Company; I am now president of the resulting subsidiary, Paragon Electric Company, Inc. We manufacture timers and time controls. My activities have been largely on the business end, such as president of the Northeast Wisconsin Industrial Association; member of the board, Wisconsin Manufacturers' Association; President of Rotary Club; President of Memorial Hospital, etc. I am married to the former Dorcas Cameron of Southampton, Long Island. I have five children, three sons and two daughters: George and Cameron, 14, Robert, age 12; Dorcas and Barbara, 16 and 8, respectively. My hobbies are golf, fishing and hunting. This is a rapid thumbnail sketch, but I hope it will fill in some information." It is good to hear from you, George, and I hope you signed up for that golf tournament.

Another correspondent is **Dick Bailey**, 521 Brandonwood Road, Kingsport, Tenn.: "You thought I was neglecting you. I guess if I weren't laid up at home for a couple of days with a virus throat, I would be. But this gives me a chance to at least say 'hi,' and not 'go to hell.' I just dislike being one of those—(censored) that makes your job so tough. So let's get me out of that category now. I'm not rich yet, but looking out of my window at our wonderful view beside the golf-course, with the warm sun at my back, I realize that I am fortunate in a lot of ways. This particular section of Tennessee is a great place to live in and raise a family. I am eight minutes from work, one minute from the club house, 15 minutes from the nearest lake, mountains in the back yard. Kingsport is a remarkable town, blessed with some fine industries like Eastman which have brought people in who have made the town a forward-looking, modern, non-political and prosperous place. The family I refer to is expanding again. My oldest daughter, Joanna, has three children; Pat, 22, University of Georgia, is teaching school; Jerry, 19, is a freshman at University of Georgia; Gary, 10, is running his mother ragged. I am enjoying my work with American-Saint Gabrian Corporation as assistant treasurer. We are having a real battle trying to get a huge plate glass plant operating profitably against the industry giants, Libby-Owens-Ford and Pittsburgh Plate Glass. We have a new president, J. C. Knochel in whom we have a lot of confidence. Never a dull moment in East Tennessee. Y'all come see us." By this time, I am sure you are fully recovered, Dick, and have already managed many rounds of golf (if indeed you had to stop at all this winter) getting ready for this year's tourney. Many thanks from all of us for writing.

This next gem came in to Ned from **John Cort** who now lives at 16801 Fernway Road, Shaker Heights 20, Ohio: "Since you have been conscientious enough to write me twice requesting a word or two as to my doings since graduation, it seems only fair that I should answer, and get you off the hook, and off my back. I must confess, however, that my experiences since leaving school, while satisfactory to myself, would not furnish much of a story line for Vance Packard or for Mickey Spillane. My first job was one with Penn Salt at their Natrone, Pa., plant, where I was busy trying to find out why sal ammoniac crystals were big, or small, and how to get the size we wanted when we wanted them. After two years there, I went with a small company in Ford City, Pa., where it was my job to build and then operate a plant designed to reclaim the waste grinding sand from the polishing of plate glass. This was quite an experience, for the plant took test tube work directly up to 100 tons per day and there were lots of problems that came up en route. Due to a squabble amongst the backers of this plant, the operation came to a screeching halt in late 1939, and I spent Christmas of that year among the unemployed. Let me hasten to assure you,

this is not the recommended approach.

"In February of 1940, I joined Houdry Process Corporation, and was busy operating the first plant in this country for the manufacture of a synthetic catalyst for the major part of the war. Uncle Sam decided that I could do him more good at the plant than in uniform, so I did not see service duty. However, running a plant during the war had its share of problems too. In 1944, I went with the Diakel Corporation, a joint venture of the M. W. Kellogg Company and Diamond Alkali Company, also a synthetic catalyst manufacturing operation. When the war was over, the plant was sold, and I stayed on with Diamond Alkali at their Cincinnati, Ohio, silicate plant. In 1948, we bought the Martin Dennis Company in Newark, N. J., and I was sent over there to help run that operation. From there, I went to the home office in Cleveland, to be manager of chromium chemical sales. After six years of this, I became division sales manager, and in July of last year, general manager of the Soda Products-Chrome Division. As of today, I was still busy being that. In spite of all this moving around, I managed to marry a graduate of Simmons College (Boston), and we now find ourselves with three children—a girl and two boys. The girl, Louise, who was a National Merit Scholar, is now a freshman at Simmons (coincidence has, at times, a long arm) and the boys, Alan and John E. are in the 10th and 4th grades, respectively. I recognize that this is much too lengthy for your use, and you may feel free to condense it as you see fit. If you mention my children, for their sake, be sure to mention that I am married." No condensation could do justice to a letter like that, John, and many thanks. John married Mary Yunk in September, 1938.

Boyd Brownell finally fell before Ned's onslaught and wrote the following: "This is in answer to your letter of January 17 and to all letters which have preceded it which have requested information that might be of some interest to the M.I.T. graduating Class of 1935. I would like to compliment you for your persuasiveness and stick-to-itiveness, and it is in recognition of this that I am answering your latest letter. I have been reluctant to write, mainly because I was not at all sure that anything I would have to say would be of any interest. Actually, my life since the year 1935 has, I believe, been quite an unspectacular one, involving marriage, children, work and more work. I think of particular significance is the fact that upon leaving M.I.T. I went with General Motors and have been with them ever since. Thus, I have approximately 28 years with them. I have for the past 26 years been with the Electro-Motive Division of GM, whose main interest in life is the manufacture and sale of diesel locomotives. My present position with this division is that of director of engineering and research. I reside in La Grange, Ill., and have a daughter, Diane, and a son, David. I have been tempted many times in the past and have desired to attend our class reunion, but it seems that every time I warm up to

the subject something comes up to throw cold water on it, and, therefore, I haven't as yet succeeded. Maybe some day I will." We hope so, too, B.B.B., and hope it will be at the 30th in 1965. Many thanks for writing.

Ned located **George Garton** at 401 Las Alturas Rd., Santa Barbara, Calif., who sent the following card: "Your letter forwarded to me here. I have been with General Motors Defense Research Laboratory as a military analyst since my retirement in August, 1960. In July, 1961, I was moved to the lab here in Santa Barbara. Missed two months work this summer with a heart attack, but seem to be in fine shape now. Have one daughter, sophomore in high school. Enjoy my work with GM but miss the Army after 30 years of it." . . . Your secretary's secretary has very sharp eyes and figured there could only be one **G. Peter Grant**. This is taken from a Boston newspaper of January 18: "Appointment of G. Peter Grant, Jr. to the new position of general manager of its Office Copy Division has been announced by James R. Carter, President of Nashua Corporation, converter of diverse paper products for industry. Grant was formerly president of Grant Photo Products, Inc., a Cleveland-based manufacturer and distributor of photocopy, photo recording and industrial photographic materials." Now, Pete, how about writing and telling us all about it. Does this mean a move from Binghamton?

Dave Cobb is now assistant registrar at Coyne Electrical and Technical School in Boston. . . . Leo Beckwith, Bob Forster, Gerry Golden, and I had lunch together recently to get some of the programs started which previously were mentioned in this column. Gerry told us he had sold the manufacturing end of his business to the M. D. Knowlton Company in Rochester, N.Y., and was regaling us with his new liaison problems. He ended by asking "any classmate with \$2 million to get in touch with me right away, and if he's a bachelor he can get away with much less." Write to Gerry c/o Langley and Company, 920 Cambridge Street, Cambridge, Mass., for complete details. . . . **John Taplin**, President and owner of Bellofram Corporation, is talking about his company to the members of Bay Colony Ventures at their next monthly meeting. This is an investment club made up of 40 young (contemporaries) men in the banking, investment and insurance fields augmented by a dozen heads of small companies in the area. . . . One sad bit of news that may have escaped you: Dave Ingalls, '34, founder of Airtron and familiar figure at IRE and WESCON, was killed in an automobile accident on the way home from a Connecticut business trip. He lived in Westfield, N.J.

If you have found the notes interesting this month, and I'm sure you have, it was due primarily to the persistent efforts of our Regional Secretary in Chicago with the able help of three or four others. We all want to know what you have been doing regardless of how unspectacular it may seem to you. If you are among the more than 300 who have never contrib-

uted to these columns, now is the time to start. If you have written before, we can wait another month or so! All reading and no writing makes Jack a dull boy, let's make this a two-way street just in the interest of fair play.—**Allan Q. Mowatt**, Secretary, 11 Castle Road, Lexington 73, Mass.; Regional Secretaries: **Edward C. Edgar**, Kerry Lane, Chappaqua, N.Y.; **Hal L. Bemis**, 510 Avonwood Road, Haverford, Pa.; **Edward J. Collins**, 904 Merchandise Mart, Chicago 54, Ill.; and **Gerald C. Rich**, 105 Pasatiempo Drive, Santa Cruz, Calif.

'36

A picture in the Boston Herald in early February showed **Semon E. Knudsen**, General Manager of the Chevrolet Division, conferring with local Chevrolet dealers at the Statler Hilton. . . . Colonel **Roman I. Ulans**, who at the time of our 25th was in Teheran, may now be found at 26 Russel Avenue, Fort Monmouth, N.J. . . . **John J. Hibbert** has moved from Liberty Corner, N.J., to 9012 Honeybee Lane, Bethesda 14, Md. . . . **Edwin F. Hulbert, Jr.** has a new address at 20 Parkview Lane in Watertown, Wis. . . . An accurate albeit anonymous correspondent who signed himself simply "36" sent the following message to The Technology Review recently: "Have just read the review of Professor Brown's book on Count Rumford in the February issue of The Review and would, for the sake of accuracy, point out one error by the reviewer. It seems to be a fairly common mistake: Baldwin's name is not spelled Laommi but Loammi. Old Yankee name." . . . If news is slim this month, you all know why. I never could write something about nothing. Help! . . . After sending the above notes I received an unexpected weekend telephone call from **Gerald McMahon** in town from Lake Charles, La., where he is now superintendent of laboratories for the Lake Charles operation of Cities Service. Gerry is also a colonel in the Army reserve—commanding officer of a logistical command unit. His oldest boy (three boys and three girls) is studying in a seminary in New Orleans. The other five, ages 16-7, keep things hopping at home. It's always fun to hear first hand news and to hear familiar voices. So do call when you are near Boston.—**Alice H. Kimball**, Secretary, 20 Everett Avenue, Winchester, Mass.

'37

Greg Villafior, Lieutenant Colonel, U.S.A., has recently retired from active duty on a permanent disability. He has been on the temporary disabled list since September, 1958, after suffering two heart seizures. Greg went into service in 1942, and ended his service in 1949 after seeing duty in the European theater. In 1950 he returned to the Army and during the Korean War was deputy chemical officer at headquarters, Eighth U. S.

Army, in Seoul. His last assignment was with Headquarters, First U. S. Army, at Governors Island as deputy chemical officer. Greg, with his wife, lives on Hibernia Road, Salt Point, N.Y. . . . **George Randall** reports that his daughter, Gerry, a junior at Simmons, is engaged to Bill Jackson, M.I.T. '62, and that his son, George Jr., is a freshman at the Institute. . . . "MIT Alumni Make News, 1962," we are proud to report, noted that **Milt Lief** was elected mayor of Olivette, Mo., last fall and that **Bill Berger** received the Outstanding Management Award of the Society for Advancement of Management. . . . **Rolf Schneider** is a patent attorney for the International General Electric Company, New York. He and his wife, Erdine, and their two children live at 83 Brookside Drive, Plandome, N.Y. . . . **Phil Peters** is still traveling extensively for John Hancock, but he can breathe a little easier now that virtually all of his SCF responsibilities are over. Phil recently arranged a weekend with **Joe Heal**, **Dick Young** and myself at his second home in Jackson, N.H., which I was unfortunately unable to attend. They had a splendid weekend and I understand that world affairs, business affairs, wood cutting, horseshoes, etc., were thoroughly covered. Phil's oldest son, Pete, is now a sophomore at Colgate. The other two boys, Gregg and Jeff, are still in high school.—**Robert H. Thorson**, Secretary, 506 Riverside Avenue, Medford, Mass.; Professor **S. Curtis Powell**, Assistant Secretary, Room 5-323, M.I.T., Cambridge, Mass.; **Jerome Salny**, Assistant Secretary, Egbert Hill, Morristown, N.J.

'38

Writing class notes is not always an unalloyed joy. I can say this month, however, it is a real pleasure to provide notes with the support of personal letters from members of the class. . . . **Bert Grossel-finger** sends a card from Uganda. He was there recently shooting with his camera in the game preserve near Murchison's Falls. . . . **Don Severance** writes that in connection with Lobby's death: ". . . nine of us flew with Mrs. Lobdell and the casket in a company plane to Monterrey, Mexico, for burial and services at the cemetery. The first person I saw on getting out of the plane in Monterrey was **Rafael (Raffie) A. Sanchez y Casanova**, formerly of Cuba but now living in Monterrey, Mexico. Raffie and I had been lab partners in Electrical Engineering and made the most of this opportunity to see one another briefly. Barring typical passport problems, Raffie will be at our 25th Reunion this June." Don also took time on a recent trip to Los Angeles to visit with the **Harold Strausses**, where I had an opportunity to meet with him. Don mentioned seeing **Ben Epstein**, who is transferring from '37 to the Class of '38 and who will be coming to the reunion.

A letter from **Fred Ray** encloses an article from 'The Oil and Gas Journal' (December 17, 1962) expressing the views of **Arnold Kaulakis**. Since 1961,

Arnold has been a vice-president and a member of the board of directors and executive committee of Esso Research and Engineering Company. He is responsible for engineering operations for the operating affiliates of Standard Oil Co. (N.J.) In sending the article, Fred writes: "I've been wanting to send you the attached article about Kuke for over a month, but didn't have your address until this month's Technology Review arrived. I assume you haven't seen it before since there has been no mention of it in the class notes. You will note that the nickname of "Kuke" that originated from Passano's freshman calculus class has not stuck, because he is now called Korky. . . . **Jack Wilber's** son got married a couple of weeks ago. This may not be the first marriage of one of the sons or daughters of our classmates, but it is probably one of the earliest ones. For me, it is certainly a milestone and is a strong reminder of the inexorable march of time. I am sure that many of us have children in college and are worrying about how and where we are going to get them in and find the money. . . . I have talked to **Charlie King**, a vice-president of Hydro-carbon Research, several times in the last few years on business matters. As chief engineer of petroleum process development for Socony Mobil's Engineering Department, I am charged with investigating the kind of processes he is licensing. Both Charlie and Jack are still the same wonderful guys we all remember back at M.I.T."

I might observe that Jack Wilber's son's marriage is not the first. My own son was married last July, and I'll bet there were some before that. If anyone cares to report in, I'll pass the word along. . . . **Al Wilson's** extracurricular activities get frequent mention in the New England newspapers. He and Carol recently addressed the Pittsfield area Council of Churches. . . . **Dick Muther** was the 1962 recipient of the Gilbreth Medal for outstanding contributions to industrial engineering.—**David E. Acker**, Secretary, Arthur D. Little, Inc., 1424 Fourth Street, Santa Monica, Calif.

'39

Continuing from the March notes, here are four hold-over items: **Irving Peskoe**, IX-A, wrote in December: "I'm still a contented country lawyer. When I am not coping with clients, judges, and bill collectors I try to sally forth to do friendly battle with those whom I regard as representing the forces of reaction. Life is good except when I think of nuclear weapons. The progeny are healthy, capable, and individualistic. Riva, approaching 21, has applied to the Peace Corps. Dan, almost 18, is a freshman at St. John's College, Annapolis, Md., where he studies Greek. Anne, now 9, displays her mother's charm and warmth. Bebe and I work on a student exchange program, the American Youth Exchange, which offers North American high school students, and their families, a reciprocal opportunity to share their national culture and family life with

Latin American students of a comparable age and background. For a 10-week period, the U. S. student travels to a Latin American country, and is placed with a family having children the student's age. Likewise, on a return visit, a Latin American student becomes a member of the North American student's family. For instance, Dan spent the last three summers in South America, and now speaks Spanish quite well." Irv and Bebe both serve on the Board of Directors of the American Youth Exchange, Inc., and can be reached at their home address: 1000 North Krome Avenue, Homestead, Fla.

On a Christmas card, Dorothy penned the message for **Robert Casselman**, XV, and family—Margy, Carl, Ted, and Fritz. She wrote that "Bob finds his new position frustrating and/or challenging, day by day. Margy is happy as a junior at Wellesley. Carl's a struggling freshman at Williams. The others are also just fine." (You'll recollect from earlier notes that Bob is now president of Polaroid's new subsidiary which handles X-ray film.) . . . **August B. Hunicke**, Jr., II, and Prella wrote that their oldest, Jim, is now a junior at M.I.T., and Gretchen is a freshman at Mt. Holyoke. Their youngest, sixth-grader Debbie, "is a real joy, but doesn't much like the lot of being an only child when the others are away at college." The Hunickes live at 80 Fenwood Drive, Saybrook, Conn. . . . My fourth hold-over Christmas card message is from **Manning C. Morrill**, X, and Connie. They are now safely esconced in their new home at 311 Glendalyn Place, Spartanburg, S.C., where Manny is executive vice-president of the Cryovac Division of W. R. Grace and Company, at their new headquarters plant. Pat, 16, and Sally, 14, stayed up North when the family moved down to South Carolina to continue attending Abbot Academy, in Andover. The third Morrill girl, Judy, 12, and her brother Rod, 11, attend the newly constructed Spartanburg Day School. Manny, incidentally, represented President Stratton at the dedication of the new school on October 18, 1962.

Dr. Ernest O. Ohsol, X-Grad, Vice-president and Technical Director of Haveg Industries, Inc., Wilmington, Del., wrote that he has been hitting the foreign circuit. Last October, for instance, he gave a talk at an international Congress in Amsterdam. His paper: "Selection of Plastic Materials for Extreme Temperature Environment." Among other areas covered, Ernie spoke about the rapid developments now underway in the design of new types of plastic-reinforcing agent composite structures to meet extreme temperature environments in the rocket and missile field, deep freeze and oven baking conditions, and corrosion resistant chemical equipment. . . . **William S. Brewster**, II, now president of United Shoe Machinery Corporation, served as chairman of a seminar sponsored by the World Trade Center, in Boston, on January 17. Seminar subject: "World Business Perspective, 1963." Bill, as reported in the Boston Herald, expressed conviction that "American business—at least sizeable American business—simply has no choice but to gear its thinking to

world business if it is to prosper or perhaps even to survive." United Shoe, he pointed out, has more than 60 years' overseas experience.

George L. Estes, Jr., XVI, who has been serving as area manager for Asia, Australasia, and Africa, for United Aircraft International, was recently elected a vice-president of the firm. UAI is a subsidiary of United Aircraft which conducts foreign operations for the corporation's four divisions. George joined United's Hamilton Standard division shortly after graduation. He became assistant West Coast representative in 1943, and returned to East Hartford in 1946 in sales for Hamilton Standard. In 1957 he was appointed European representative for UAI, and two years later became the area manager for Asia, Australasia, and Africa. George now lives in West Hartford, Conn. . . . Here's news of a '39er affiliate, **Eugene M. Thomas**, who received his master of science degree in metallurgy with the class, in 1939, although he had graduated from Texas College of Mines in 1926. A news clipping indicated that Thomas had been dean of the School of Mines and Engineering of Texas Western College, El Paso, since 1942, and that as of January 1, 1963, he was withdrawing from the position as dean to devote full time to teaching engineering. TWC President Joseph M. Ray accepted Dean Thomas' decision and complimented him on his long and faithful service to the college. "Dean Thomas has come to personify the Texas Western College Engineering School, and he has been the source of inspiration to engineering students over the years."

Ernest R. Kaswell, IX-A, our class treasurer, achieved an extra-curricular distinction on November 14 by election as president of the American Association of Textile Chemists and Colorists. The election took place at the 41st national convention of the AAT-CC, in Atlanta. Ernie, who is president and associate director of Fabric Research Laboratories, Inc., Dedham, Mass., has served many years on several of the important committees of the textile association. He also is well known in his profession as the author of many technical publications on textile technology. For instance, in 1953 he wrote the textbook "Textile Fibers, Yarns, and Fabrics." Currently, scheduled for early 1963, Wellington Sears Company is publishing his latest book, "The Handbook of Industrial Fibers." Ernie has contributed to several encyclopedias including the Britannica and the World Book. He is also president of the Fiber Society and a fellow of the Textile Institute, Manchester, England. Getting back to '39 activities, Ernie of course has been active in each of our reunions so far, and I presume he will be a key member of our up-coming 25th.—**Oswald Stewart**, Secretary, 31 Birch Road, Darien, Conn.

'40

Don Richardson has been elevated to general manager of General Electric's Aerospace and Defense Service Engineer-

ing Department. There are approximately 1,000 people in the new department including over 300 service engineers. . . . **Herb Holloman**, who is in the news frequently as Assistant Secretary of Commerce, was guest speaker on January 23, at the national meeting of the American Meteorological Society in New York. . . . Mr. and Mrs. **Sam Rabinowitz** were co-chairmen of the reception of the Ambassadors' Ball held January 19, in the Imperial Ballroom of the Statler-Hilton Hotel in Boston. Sam is chairman of the Board of Directors of the Colonial Provision Company and is also an officer in numerous philanthropic groups, including the Combined Jewish Philanthropies and the Hebrew Home for the Aged. Additionally, he is chairman of the Packers Division of the Heart Fund.—**Alvin Guttag**, Secretary, Cushman, Darby and Cushman, American Security Building, Washington 5, D. C.; Dr. **Samuel A. Goldblith**, Assistant Secretary, Department of Food Technology, M.I.T., Cambridge, Mass.

'41

Charles J. Muller has just completed a year as president of the Alumni Association of the East Texas State Teacher's College which he attended prior to enrolling in the Architecture Department at M.I.T. and from which he has subsequently received a master of education degree. For the last five years Charles has been engaged in the private practice of architecture and consulting throughout Northeast Texas with his offices located at 2507 Washington Street, Commerce, Texas. . . . **Edward A. Beaupre** has been elected president of the Yankee Post of the American Ordnance Association which covers all of the Northeastern United States. Ed has been active in ordnance since his graduation from M.I.T. He served for nearly five years on active duty in the Ordnance Department during World War II. He is presently associated with Sanders Associates in Nashua, N.H., where he resides with his wife and family. . . . **Everett R. Ackerson** has become the proud father of a brand new baby daughter named Kristen, born February 1, 1963. As further cause for happiness, Bud has just recovered from a successful shoulder operation which should prove to be a substantial aid in shouldering his increasing family burden. Bud is presently general manager of Reichhold Chemicals, Inc.'s Deecy Products Division in Cambridge, Mass. He resides with his wife and family at 16 Vernon Street, South Braintree, Mass.

Professor **Fred T. Haddock** of the University of Michigan continues to be in the news by being credited with having guided University of Michigan researchers to two world firsts in his capacity as director of the Peach Mountain Radio Astronomy Laboratory. They are, namely, first radio contact of the planet Mercury and the first official measurement of the planet Saturn. He also had a third (unofficial) first by succeeding, with his staff at the University of Michigan Radio

Astronomy Laboratory, in completing its portion of the instruments for the POGO Satellite ahead of all other university and industrial contractors in the nation that have been working on the project. The POGO (Polar Orbiting Geophysical Observatory) will be fired late next year. During World War II, Fred headed research in microwave radar components which resulted in the first submarine periscope radar antenna. For originating this antenna system and directing the project, he was awarded a commendation by the Secretary of the Navy in 1945. He also headed one of the first groups of radio astronomers in research on microwave radio astronomy from 1946-56 at the U.S. Naval Research Laboratory. Later he designed and supervised construction of the University of Michigan's 85-foot radio telescope at Peach Mountain which he and other scientists now use for scientific studies of space. This group is reported to be one of the strongest space radio astronomy groups in the world. Fred received a bachelor of science degree in physics from M.I.T. in 1941 and a master's degree in physics from the University of Maryland in 1950. He is vice-president of the American Astronomical Society and a member of several government committees on space science and is reported to be among the world's top astronomers who believe intelligent life is probable on many distant planets. He lives with his wife Margaret and sons Tom, 13, and Dick, 11, at 800 Avon Road, Ann Arbor, Mich.

Charles E. Bonine has been made head of a new chemicals program department formed by the Atlantic Refining Company as a result of its acquisition of the Massachusetts Plastics Corporation of Ludlow in 1962. Charles will be responsible for planning and implementing Atlantic's chemical expansion program of petrochemical activities in new growth areas and for the operation of the company's chemical subsidiaries, Massachusetts Plastics and J. P. Frank Chemical and Plastic Corporation in Brooklyn. Charles joined Atlantic in 1941 as a chemical engineer. He was named home office sales manager of chemical sales in 1951 and chemical sales manager in 1953. He is chairman of the board of Massachusetts Plastics and president and chairman of J. P. Frank Chemical and Plastic Corporation. . . . **Vincent Kling** has been chosen as the architect for the design of an all-purpose stadium with retractable roof and split level parking, situated along the Southeast Expressway in Boston, to be completed by 1965, according to William H. Sullivan, Jr., President of the Boston Patriots and the Metropolitan Coal and Oil Company. The stadium is to be built under the auspices of the Stadium Authority. The stadium will be a \$50 million project seating 60,000 and parking 15,000 cars. Vincent has designed large-scale urban projects in a number of cities, including a center-city stadium for Philadelphia. . . . We hope the following announcement does not make you fellows feel your advancing age too intensely. The son of **Charles F. Peck, Jr.** was married to Johanna Heath

on Wednesday, December 19, 1962, in the First Congregational Church, Ithaca, N. Y. . . . Don't forget to keep the news items flowing by sending them promptly to any one of the secretaries. —**Walter J. Kreske**, Secretary, 53 State Street, Boston 9, Mass.; **Henry Avery**, Assistant Secretary, 169 Mohawk Drive, Pittsburgh 28, Pa.; **Everett R. Ackerson**, Assistant Secretary, 16 Vernon Street, South Braintree 85, Mass.

'42

Marty Levene, treasurer of our class, recently sent me a breakdown of his report for the 20th Reunion. He reports that we made a little over \$400 on the reunion and will have a tidy sum available to get us started for the 25th. On behalf of all members of the class, I would like to thank Marty for the hours of painstaking work he has put in for the reunion and in handling the problems of the class' finances. . . . Speaking of the reunion brings to mind our indefatigable chairman, **Al Goldis**. Al has been elected president of the New England Men's and Boys' Clothing Manufacturers Association. What is even more important, perhaps, is that he is a member of the Executive Committee of the Clothing Manufacturers' Association and a member of the permanent sub-committee on national labor negotiations. This puts Al in the unenviable task of representing the entire clothing manufacturers at the bargaining table with the union when new industry-wide labor contracts are settled. This is a most impressive responsibility.

Bill Pease has been named president of the Aracon Laboratories, which is a division of Allied Research Associates, Inc. . . . **Henry Hill**, who is president of Riverside Research Laboratories in Cambridge, has been elected chairman of the Northeastern Section of the American Chemical Society. . . . **Carl McGinnis** has moved from Washington, D.C., to Los Angeles. He is with the C. Leonardt Improvement Company. . . . It was good to see **Bob Navin** in my office. He has quite recently become president of Cavitron Ultrasonics, Inc., in Long Island City. The work this company is doing, as Bob describes it, is extremely interesting. They use ultrasonic techniques in two major fields. The first is in the machine tool field where they have developed techniques for impact grinding. The other is dentistry where they have an exciting new product which can be used by dentists and dental technicians to clean teeth. The results are much superior to those produced by any other method. Any of you interested in ultrasonics should contact Bob.—**John W. Sheetz, 3d**, Secretary, Room 3-344, M.I.T., Cambridge 39, Mass.

'43

I received a card from **Leo and Gloria Duval**, which I inadvertently omitted from previous notes, with their Season's

Greetings, showing their four children, Patty, Sally, Mike and Marylee. Gloria wrote, "Leo and I notice it's getting near 'Round-Up' time for the Class of '43—hope we can make it. Leo is now manager of product information services, Lighting Division, Sylvania Electronic Products, Inc. (a subsidiary of General Telephone and Electronics Corporation) at Salem, Mass. We live in Marblehead, and, as you can see, our family is growing like mad!" . . . **John Peterson** has been elected vice-president and general manager of the Blanton Company, St. Louis, which recently became a wholly owned subsidiary of Drew Chemical Corporation of New York. John has had 17 years in the chemical industry. He was formerly director of sales of Drew's industrial division, and held management positions in the chemical divisions of F.M.C. and W. R. Grace. The Blanton Company refines and processes animal and vegetable oils for food products and applications in the chemical, pharmaceutical and paint and finish industries. . . . **Dr. Edward R. Kane**, Director of the Nylon Technical Division of the DuPont Textile Fibers Department, has been named to the post of assistant general director of the Technical Divisions. Dr. Kane, who started with DuPont in 1943 as a chemist in nylon research, received his Ph.D. in physical chemistry from M.I.T.

The 20th Reunion, scheduled for June 7, 8 and 9 at the Mayflower Hotel, promises to be a great affair. Many of you recall the excellent facilities of this resort hotel in Plymouth, Mass., where we held our tenth. We are a strong, well-knit class, and I know that the turnout will be good. . . . I regret to announce that **Walter H. Hildebrand, Jr.**, of Spooner, Wis., passed away on December 23, 1962. A graduate in Course XV, he was president of W. H. Hildebrand and Company, in Chicago. The class extended its sympathies to his family.—**Richard M. Feingold**, Secretary, 10 North Main Street, West Hartford 7, Conn.

'44

This month's news is fairly short, but I do want to acknowledge numerous clippings received. . . . **Bob Laney, V**, and XIII-A, has been promoted to manager of the Bethlehem Steel Company's Quincy Shipyard. He will be in charge of the yard's shipbuilding operations. Bob was a graduate of Annapolis and had been active in nuclear-powered ship construction prior to joining Bethlehem Shipbuilding Division in 1959. He was very closely associated with the construction of the "U.S.S. Long Beach," the world's first nuclear-powered guided missile cruiser. . . . **Bill Ritterhoff, II**, with Bethlehem Steel Company at Sparrows Point, Md., has been appointed assistant chief engineer for the new plant Bethlehem Steel is to build at Burns Harbor, Ind. This \$250 million project, announced in the general news in January, eventually will be expanded into Bethlehem's largest steel mill. Bill has been with Bethlehem since 1958. . . . A note received indi-

cates that **Dr. Paul Talalay, IX-A**, has been named professor of pharmacology and director of the Department of Pharmacology and Experimental Therapeutics at the Johns Hopkins University School of Medicine. Dr. Talalay received his medical degree from the Yale University School of Medicine.

Bob Maher, X, has been appointed gas marketing superintendent in the gas sales section of the Producing Department of Pan American Petroleum Corporation in Tulsa, Okla. Pan American Petroleum is affiliated with AMOCO, which I recognize from the big advertising change in the East to American. This past winter our Northeastern weather was below normal in temperature, and I hope this has helped Bob in his sales. . . . A note from Providence, R.I., Journal indicates that **James McClelland, XVI**, has taken on the duty of school committee chairman for East Providence. The clipping indicates that the electorate believes a technical background and experience in dealing with creative individualistic persons is a help in school work with its many creative professions. . . . A release from American Oil Company headquarters in Chicago indicates **Fred Blatz, II**, is moving from Salt Lake City to Chicago as sales manager for special projects in the marketing-merchandising department. Possibly on my next trip to Chicago, I can call Fred on the phone and get a more complete report on the move.—**Paul M. Heilman**, Secretary, 30 Ellery Lane, Westport, Conn.

'46

Dr. Ju Chin Chu, Professor of Chemical Engineering at Brooklyn Polytechnic Institute, has recently completed a tour of 30 intellectual centers and industrial cities on a speaking tour of the Far East, Middle East and Europe. Dr. Chu received his B.Sc. in chemistry from Tsing Hua University and his Sc.D. in chemical engineering from M.I.T. in 1946. He was with Shell Chemical and on the faculty of Washington University before joining Poly in 1949. He is a senior member of four honorable and 11 professional societies and has had more than 70 papers, patents, patent disclosures and books published. Dr. Chu was elected as fellow by AAAS for his significant contribution in engineering science and was honored with the 1960 Achievement Award by CIE. Currently he is chairman of a "Space Technology Symposium" and on the advisory board of International Chemical Engineering of the A.I.Ch.E. . . . **Douglas M. Surgenor** has been appointed dean of the School of Medicine at the University of Buffalo. Dr. Surgenor received his B.S. from Williams College, his M.S. and Ph.D. from M.I.T. in '41 and '46.

Except for the following new addresses, that's the extent of the news for the month: **Weston W. Goodnow**, 416 Chester Avenue, Moorestown, N.J.; **Alexander J. Hoffmeister**, 160 Glenhurst Drive, Penn Hills, Verona, Pa.; Commander **George W. Phillips, Jr.**, 116 Edgemere Lane, Hillsmere Shores, Annapolis, Md.;

William H. Auerswald, 154 Arlington Road, Longmeadow, Mass.; **James V. Chabot**, 3415 Devonbrook Drive, Bloomfield Hills, Mich.; **Majed A. Akel**, Box 93, Yulee, Fla.; and **Dr. Lofti A. Zadeh**, 16 Chauncy Street, Cambridge 38, Mass. Don't forget your news starred secretary.—**John A. Maynard**, Secretary, 25 Pheasant Lane, North Oaks, St. Paul 10, Minn.

'47

Now that spring is here it's time to start thinking about Alumni Day. We certainly look forward to seeing a good many members of our class there this year. . . . In order to get more news into this column we should have correspondents in various parts of the country. If anyone would like to volunteer I'd be happy to hear from him. . . . Now getting to some news. . . . I ran into **Claude Brenner** the other evening shopping in a furniture store. He looked as dapper as ever. . . . **Dr. Robert Rediker** was appointed a fellow of the IRE; congratulations, Bob. . . . **Dr. Peter Poulos** has joined the open heart surgery service team being formed at the B. S. Pollack Hospital in Jersey City. His initial efforts will be centered around applying basic concepts of fluid mechanics and engineering to the surgical problems encountered.

The following is a list of new addresses: **Harry C. Dedell, Jr.**, Newtown, Conn.; **Robert D. Harvey**, Western Springs, Ill.; **Philip R. Jonsson**, Midland National Bank Building, Midland, Texas; **Donald W. Kornreich**, Pasadena, Md.; **Philippe Meyer**, Quai Aux Fleurs, Paris, France; **Charles Reynolds**, West Boylston, Mass.; **James H. Rial, Jr.**, Evanston, Ill.; Captain **William H. Rowen**, Lockheed Missile Space Company, Sunnyvale, Calif.; **Dr. Watt W. Webb**, Ithaca, N.Y.; **C. Richard Whelan**, Princeton, N.J.; **Robert N. Creek**, Los Angeles 54, Calif.; **Robert G. Crandall**, Yardley, Pa.; **John L. Cowan**, Riverdale 63, N.Y.; Lieutenant Colonel **Charles E. Coates, Jr.**, Park Forest, Ill.; **Frederick G. Bremmer, Jr.**, Long Island City, N.Y.; **James J. Bagnall, Jr.**, Bethesda 14, Md.; **Edward J. Anderson**, Wheaton, Ill.; Lieutenant **Melville W. Ackerman**, Castine, Maine; **Alexander B. Ward**, Burlington, Vt.; Professor **Milton L. Vogel**, Peoria, Ill.; **J. William Reece**, Acton, Mass.; **Benjamin Z. Ranan**, Lynnfield, Mass.; Major **Robert T. O'Brien**, Cambridge, Mass.; Commander **Howard H. Montgomery, Jr.**, Annapolis, Md.; Lieutenant Colonel **John T. McCabe**, Seattle 3, Wash.; **Harry E. Crossley, Jr.**, Topsfield, Mass.; **Harris M. Carter, Jr.**, Orinda, Calif.; **David R. Brown**, South Lincoln, Mass.—**Martin M. Phillips**, Secretary, c/o Tyco, Inc., Hickory Drive, Waltham, Mass.

'48

With the world growing smaller and smaller these days, our attention is increasingly focused on aerospace and sa-

tellite programs. Professor **Holt Ashley** was chairman of a session at the 31st Annual Meeting of the Institute of the Aerospace Sciences in New York recently. The possibility of life on other planets was examined at this, the last, meeting of the IAS, which merged recently with the American Rocket Society to form the American Institute of Aeronautics and Astronautics. . . . Lieutenant Commander **Joseph F. DeBoid** is commanding officer, U.S. Naval R & D Satellite Communications Group, aboard the 'USNS Kingsport,' the Navy's first satellite communications ship. The 'Kingsport' is scheduled to participate in research programs leading to the development of worldwide satellite communications systems. Lieutenant Commander DeBoid is the only engineering duty officer in the Navy with a command at sea. . . . In the field of business, we find many recent promotions. **Robert H. Bliss**, Class President, has been named general manager of United Shoe Machinery Corporation's Harmonic Drive Division. In his new position, Bob is responsible for engineering, manufacturing and marketing of the corporation's patented Harmonic Drive principle of mechanics as incorporated into high performance actuators and drives used primarily today in the nation's aerospace program. Harmonic Drive units are also under development for other major markets such as automotive, instrumentation and industrial control valve fields. . . . **George F. Clifford, Jr.** is president and chief operating executive of Cryonetics Corporation. In this capacity he directs the development of specific operating programs and subsequently affects those programs through co-ordination of the company's departmental activities. The initial operations are in the Boston area, but Cryonetics Corporation also maintains an office in Washington, D.C. A West Coast operation looms early in the firm's plans in order to provide close liaison with western users of the company's services and products.

In a note from **William W. Barton**, I learn that Bill, a veteran of nuclear equipment research, now heads up the engineering work on the \$850,000-contract awarded to AMF Atomic Division, American Machine and Foundry Corporation for design and production of Nerva remote handling systems. This program is expected to run well into 1966. . . . **John C. Ava Llone** has been named manufacturing manager of the Boston Street, Salem special products and the Ipswich transformer operation of the Lighting Product Division of Sylvania Electric Products, Inc. . . . **Walter R. Connell, Jr.** has been named product manager of rubber chemical sales by the B. F. Goodrich Chemical Company. He will be responsible for all sales and market development activities for the firm's rubber chemicals including antioxidants, antiozonants and accelerators. . . . **Haig S. Yardumian**, prominent real estate manager and developer in the Malden, Mass., area, has been elected chairman of the Malden Redevelopment Authority. His local real estate business is mainly confined to management, but he has undertaken land development projects in Read-

ing and Peabody and is the treasurer of a golf course housing development on Cape Canaveral in Florida.

I suppose all of you are well acquainted with **Ken Brock's** name by now! Ken is doing a great job as chairman of the Class of 48's 15th Reunion, and I hope that we all will get behind Ken and make this the biggest and best reunion yet. Just to remind you of the details, the reunion will be held at the Hotel Belmont, West Harwich, Mass., on June 7-8-9, 1963. Room rates (double occupancy): \$16.50 to \$21.00 per person per day including meals, 15 per cent gratuity and Massachusetts Old Age Tax to be added to hotel bills. Registrants pay hotel directly. Since the registration fee prior to May 17 will be \$10 and \$12 thereafter, let's all send in our reservations now. You'll hear more from Ken later, but let's make those plans early. See you at reunion!—**Harry G. Jones**, Assistant Secretary, 1 Horizon Road, Fort Lee, N. J.; **Richard H. Harris**, Secretary, 26 South Street, Grafton, Mass.; **Robert R. Mott**, Assistant Secretary, Box 113, Hebron, Maine; **Herbert S. Kindler**, Assistant Secretary, 128 Elatan Drive, Pittsburgh 16, Pa.

'49

Things are a bit hectic for me at the moment (February 12). My family has been ensconced in London (new address below) just over a week and is still suffering moving pains. My working hours have been (and will be for a few more weeks) tied to the third shift availability of 1401 computer and the absolute necessity of bringing on line a new distribution control and production scheduling system two weeks earlier than originally scheduled. Those of you who have worked with computers will recognize just how implausible our success to date really is. . . . **Stan Margolin**, Class Treasurer and co-ADL man, was in London last week and reported that a 15th Reunion committee was constituted at a meeting of the class executive committee (which my brief stateside visit in January just missed). I believe Stan and **Wally Row** are co-chairman. If I am wrong, official announcements, bulletins, and complaints will no doubt clarify matters in the future. The only word at the moment is that another levy of class dues is under consideration to augment the already scandalously engorged class coffers, so as to provide adequate working funds to the reunion chairmen.

A news release from Geophysics Corporation of America, Bedford, Mass., reports that **Alvin V. Block**, who joined the company in 1959 (S.B., S.M., Course VI) has assumed the new position of director of engineering operations at the company's Physics Research Division in Bedford. He will "supervise expansion of the division's instrumentation programs for rockets, satellites, and re-entry space vehicles. He will also direct the field activities and the design of payloads and ground support equipment required for the company's international scientific rocket firing programs." . . . Harvard

University announces that **Joseph R. Passonneau** (S.M., Course I), now a St. Louis architect and Dean of the School of Architecture of Washington University, will join the Harvard faculty during 1963-1964 as professor of architecture and chairman of the Department of Architecture.

Purdue University announces a reorganization leading to the establishment of separate Schools of Humanities and Science in place of the School of Science, Education and Humanities. The newly established School of Science will have as dean, **Felix Haas** (S.B., '48, M.S., '49, Ph.D., '52). The constant reader will recall the announcement in these columns last year of Dean Haas's transfer from Wayne State University to Purdue to become director of the division of mathematics. . . . From the Frigidaire Division of General Motors comes word that **Harvey R. Tuck** (B.S., M.S., II) is one of a pair of inventors of a clothes dryer having an absorbent bed. . . . In Lexington, Mass., Dr. **Italo S. Servi** has become staff scientist at Ledgemont Laboratory, Kennecott Copper Corporation's new basic research installation. . . . While these notes were being prepared for the April issue, a three-day crisis in your secretary's current project has delayed completion and mailing until very near the publication deadlines. If we missed it, I apologize. If we made it, cheers from England.—**Frank T. Huls-wit**, Secretary, 53, Albert Hall Mansions, London S.W. 1, England.

'50

I would like to take this month's column to define the responsibility of each Class of '50 member in regard to class notes in *The Technology Review*. As I see it, it is not the secretary's responsibility to light fires under his classmates, or guess what his classmates have done since graduation, or even to print two paragraphs of class notes. Rather, it is the responsibility of each classmate who reads *The Technology Review* to sit down this very instant and write something about himself. Otherwise we will be out of business next month and I don't want to retire so young.

Dick Lemmerman is part owner and president of Engineered Products Company in West Hartford, Conn. The company controls a number of patents on air-handling suppressors, aircraft test facility sound-proofing and run-up silencers. The West Hartford company has two other plants, one in New York City and another on the Pacific Coast. He lives in Bloomfield. . . . **John Cord** is chief, Aircraft Systems, Systems Advanced Design at Bell. John was associated with Chance-Vought Aircraft from 1953 to 1957 as a group leader in structural design. John joined Bell in 1957. In his present position, he is responsible for all advanced design activities involving aircraft, missile and drone systems. . . . Again, I have the following address changes for you: **Arthur H. Ballard**, 5803 Osceola Road, Washington 16, D.C.; **J. R. Bal-**

linger, Apt. 41, Sevlén Manor Apts. 242290 W. 7 Mile Road, Detroit 19, Mich.; **Thomas N. Clark, Jr.**, 82B Troy Drive, Springfield, N.J.; **Joseph K. Dillard, Jr.**, 3323 Scathlocke Road, Pittsburgh 35, Pa.; Commander **Chester H. Fink**, Bureau of Ordnance, Navy Department, Washington, D. C.; Lieutenant Colonel **William B. Freeman**, 6930 South Pennsylvania, Littleton, Colo.; Professor **Carl F. Long**, Reservoir Road, Hanover, N. H.; **Abraham Manevitz**, 30 Livoli Road, Framingham Center, Mass.; **Garvin M. Moore, Jr.**, 14 North Gate Park, West Newton 65, Mass.; **John J. Paull, Jr.**, 1221 Partridge Drive, New Martinsville, Va.; **Kenneth G. Phillips**, 182 Royal Dunes Circle, Ormond Beach, Fla.; **Albert W. Rader, Jr.**, 303 East 27th Street, New York 16, N. Y.; **Donald B. Robertson**, 60 Silver Saddle Lane, Rolling Hills Estates, Calif.; **Suren A. Semonian**, Box 492, Naugatuck, Conn.; **Charles D. Spencer**, 13 Karla Drive, Whippany, N.J.; **Dr. M. Patrick Sweeney**, 234½ South Bonnie Brae Street, Los Angeles 57, Calif.; **Clemens L. Syverson**, 155 Kings Highway, Snyder 26, N. Y.; **Dr. William Tobocman**, Case Institute of Technology, Cleveland 6, Ohio; and **William O. Young, Jr.**, 1333 Hollins Road, Waynesboro, Va.—**Gabriel N. Stilian**, Division Manager, American Management Association, 1515 Broadway, New York 36, N.Y.

'52

Spring is finally coming and with it brings the first announcement of the Annual Cocktail Party to be held on June 7 at the Faculty Club. Watch this space for further details. Dutch Treat, see who's around, and have a good time getting together as usual. The maifag is holding up somehow, but there is plenty of room for more. . . . The wedding of **Sarkis Zartarian, Jr.** to **Dr. Anna Angele Haroutunian** took place in November, at St. Paul's Chapel of Columbia University. Sarkis is vice-president of Peters and Company Inc., food service equipment manufacturers, in Boston. . . . **Gus Rath**, who has been teaching a class in teaching machines, at Northeastern, tells me he bumped into **Ed Paul** who is with Baird Atomic, along with **Art Turner**, and **Kaspar Habosian**. . . . **Bob Schwannhauser** came in from the sunny warmth of San Diego where he is still with Ryan. . . . **Arnie G. Kramer** is in Italy for a short term project for Sylvania. . . . And **Arnie A. Kramer** is going skiing in the Laurentians. . . . **Alfred J. Kargl** is engineering manager of Emhart Manufacturing Company's food processing division in Hartford, Conn. . . . **Robert E. Goode** has been named manager of the Engineering Mechanics Division of Dynatech Corp., Cambridge.

Paul Ries writes that he is with Procter and Gamble Company, Frankfurt-am-Main, Germany, working as market research manager. Paul, Betty, and son Scott live in Ruppertshain in the Taunus Mountains with good skiing and easy access to weekend in many parts of

Europe. . . . **Philip Hallof** is with McPhar Geophysics, Ltd., as chief geologist of mining exploration and is living in Don Mills, Ontario. . . . **Curtis E. Carr** is with Edgerton, Germeshausen, and Grier, Inc., as a scientific executive doing development engineering. . . . **Allen D. Stedry** is with the U.S. Weather Bureau, St. Joseph, Mo., as, you guessed it, the weather forecaster. . . . **George Swartz** is in Princeton, N.J., with RCA Laboratories doing research in plasma physics. . . . **Charles J. Mathews** is a lieutenant in the U.S. Navy, and is with Southeast Division Bureau of Yards and Docks, as executive assistant to the assistant director for construction, monitoring the construction of all naval activities in the southwestern United States (approximately \$65 million value).

Harvey H. Roscoe is in West Acton, Mass., and working for Raytheon Missile and Space Division as section head in aerodynamics in missile preliminary design. . . . **Howie Fawcett, Jr.** is still with Newport News Shipbuilding and Dry Dock Company, as staff supervisor and hull project engineer for the Polarix Submarine Tender 'U.S.S. Hunley.' . . . **Tim Brown** is with Bell Helicopter Company, in Fort Worth, Texas, as an electronic design engineer on the Bell helicopter flight simulator and RH-2-Research Helicopter under the Army-Navy Instrumentation Program. . . . **Harvey Eisenberg** is now in Livingston, N.J., with Champlain-Zapata Plastics Machinery, Inc., of Caldwell, N.Y., as director of marketing. . . . **Bob Damon** is with Olin Industries as manager of applications engineering in solid propellant, pyrotechnic and explosive device sales. . . . **William M. Hannan** is with American Bureau of Shipping as the senior surveyor who reviews structural drawings of merchant ships being built in Western Europe to meet the requirements of the American Bureau of Shipping. . . . **Rodger Vance** is with North American Aviation, Inc., doing facilities planning in Los Angeles. . . . **Heinz Gunther** is with Ayerst Laboratories Inc., as export technical supervisor maintaining technical contact with subsidiaries and licenses abroad. Heinz spent several years in the industry in Sao Paulo, Brazil.

Joel L. Ekstrom is with Sylvania Laboratories in Waltham, Mass., as advanced research engineer. . . . **Michele S. Sappuppo** is with M.I.T. Instrumentation Laboratory as assistant director in design and development of advanced miniature inertial components. . . . **William Yu** is with Southern Motors, Inc., as branch supervisor in charge of the company's branches in Manila. . . . **Cliff Sayre, Jr.** is with DuPont as a research supervisor in new product and process development in Charleston, W. Va. . . . **Nathan Sivin** has gone to Taipei, Taiwan, China, but we don't know with whom or why. . . . **William A. Hey** is in Washington state with Boeing working on research and development. . . . **Edward M. Gulachenski** is with the New England Electric System doing system planning out of Boston. . . . **Richardo Haegler** is with Toledo de Brasil (Toledo Scale Affiliate) as sales director in Sao Paulo, Brazil.

. . . **James H. Lee** is in Woodland Hills, Calif., with Litten Systems Data Systems Division as head of the MTDS display systems group designing displays for tactical data systems. . . . **Thomas P. Kennedy, 3d**, is with Texas Instruments in Dallas, Texas, as a project engineer in heavy radar design.

Alexander L. M. Dingee, Jr. is still with his own company, Massey Dickenson, Inc., in the Boston area. . . . **Harris Lang** is a consultant with Booz Allen and Hamilton in Brechsville, Ohio. . . . **Kenneth W. Goff** is with Leeds and Northrop Company, as head of the Systems Analysis Section supervising studies of Industrial Control Systems. . . . **Newton Shanbrom** is with Turner Construction Company, in New City, doing estimating engineering, developing the price of the firm's product under competitive conditions, and trying to obtain new business. . . . **Paul L. Przybylek** is with the Naval Air Material Center in Philadelphia as a research engineer on aero structures. . . . **George T. DeMoss** is a planning engineer for Western Electric Company, Laureldale, Pa., in the transistor plant and is a licensed professional engineer in Pennsylvania. . . . **Charles H. Ehlers** is in Lexington, Mass., with W. R. Grace and Company, Dewey and Almy Chemical Division, Cambridge, as research manager. . . . **Martin Kay** is with American Machine and Foundry Co., in Stamford, Conn., as supervisor of the servo group, Radar Systems Section. . . . **Amos T. Dixon, Jr.** is with Goodyear Tire in Beaumont, Texas, as a supervisor in charge of production for the start up of new synthetic rubber and monomer plant. . . . **Edward K. Wright** is with the Analytic Services Inc., in Alexandria, Va., as a mechanical engineer working on weapon systems and operative analyses. . . . **Chuck Springer** is with Reading Tube Company, as assistant general superintendent, in Reading, Pa.—**Dana M. Ferguson**, Secretary, 242 Great Road, Acton, Mass.

'53

I'm afraid my New Frontier training has gotten me into bad habits. (We are so busy having meetings to make decisions about what should be done, that we never have time to get around to doing anything about our decisions. C'est la.) And I am writing these notes in one place with my files in another; thus, there isn't much news. Have seen or heard very little of classmates down by the murky Potomac. But . . . **Gil Gardner** was in town for a couple of days; spent an evening with him. He and Janie are still in Bedford, and report no new population developments for that fair town. (To my recollection, they are leading the parade for the "most children" award at the 10th Reunion with six in their brood. Of course, **Paul** and **GINNY Shepherd** are close behind with five; but at last look they won't match or top six. Anyone else?) . . . See brother **Reuben Pomerantz** frequently; if you recall he "retired" from the Quartermaster

Corps and has joined the Commerce Department. This must be kept confidential, of course, but Reub has developed into a polished bureaucrat and now ranks with the best. . . . **Vince Roggeveen** (now a professor in both Civil Engineering and Business Administration Departments at Stanford) was in town for a week; saw him at a couple of meetings, and we both got "stuck" with one of those new Washington traditionals, the early morning business-type breakfast. (Boy, they have gotta go—if they are a Democratic tradition, please vote Republican next time around.) . . . **John Ehrenfeld** was also seen "stalking" around Washington; never did find out what he was up to, but he related that Reunion Committee activities were humming along. And speaking of reunion doings, **George Fuld** has extended his services. Any other volunteers will be appreciated. Be in touch with Paul Shepherd or myself. . . . **John Van Winkle** was married last December to Mary Louise Friedman in Schenectady; Jon is finishing up his doctorate and Mary Louise is in the teaching business. . . . **Bob and Tickle Anslow** were in attendance at the wedding. That is all, except to report that brother **Wohl** is seriously considering a return to the Cambridge world next September.—**Martin Wohl**, Secretary, 3724 Cumberland Street, N.W., Washington 16, D.C.

'54

The season of Christmas and New Year resolutions apparently had its effect. All kinds of letters have arrived from members of the class and their wives since mid-December. They are much appreciated. Many thanks to all who have written and to the rest of you who, I am sure, are getting ready to write today. . . . **Paul Valerio** has sent his regular report from Brooklyn, N.Y., where he, his wife Agnes, and their three sons are firmly settled. In addition to running his consulting firm, Paul P. Valerio Associates, Paul is teaching in the Civil Engineering Department at the Polytechnic Institute of Brooklyn. Paul also reports on several other members of the class. **Ed Hofstetter**, who acquired his Ph.D. in electrical engineering at Tech in 1960, is now teaching the subject at Tech. Ed and his wife Nancy have two daughters, and are living in Arlington, Mass. . . . **Sooren Soovajian** is working for IBM in Kingston, N.Y., and working on an M.S. in business administration at R.P.I. He, his wife Virginia, and their daughter live in Saugerties, N.Y. . . . **Marty Raab** is now an architect in Great Neck, N.Y. He and his wife Gail now have a son and daughter.

Dean Jacoby has also sent one of his regular reports. He was in Cambridge in February to take part in a meeting of the M.I.T. Corporation Visiting Committee for Student Activities. Dean says that his membership on the committee makes him "feel a little old." Dean and his wife Judy live in Alton, Ill. Dean also had some news about **Roy Riedinger** and

Warren Davis. Roy left the bachelor ranks last November 3 in Cincinnati. His wife Debby is a Sarah Lawrence girl. Roy is still in the field of packaging at Procter and Gamble. He was promoted last June to head of the section in which he had been an Indian. Warren has moved his wife and two sons to Okinawa. He is working for the government out there, apparently in the same general area he had been in previously in Washington (whatever that general area is). . . . A rather lengthy letter accompanied **Dave Wones'** Christmas card. He had a full year in 1962, including a nose operation in March, a trip to Japan for meetings in May, and a two-month field-work binge in New Mexico in July and August. Between these activities, Dave spent some time on his regular job with the U.S. Geological Survey in Washington, D.C. He says that his two sons really enjoyed camping out in New Mexico. Dave reports that **Hal Olsen** is also working for the Geological Survey, and the two of them spend every morning drinking coffee together. Hal was married in July, 1961, and he and his wife Virginia have a daughter, Nina. . . . **Herb Jacobson** married Annelies Janofsky in Beverly Hills, Calif., last August. . . . **Dick Walker**, his wife Carol, and their several sons are living in Massachusetts, where Dick works for the U.S. Gypsum Company, in Pittsfield. . . . **Charlie Burnham** is a post-doctoral fellow at the Geophysical Lab of the Carnegie Institute of Washington, D.C. Last summer, Charlie hopped over to Europe for a meeting on "50 Years of X-ray Diffraction" in Munich, Germany. . . . **George Perry** was in D.C. briefly last spring, "on loan" to the Budget Bureau. According to unconfirmed reports, George is now back at the University of Minnesota. . . . And finally, Dave reports that **Carl Schmid** and his wife Joan are living in Ohio, where Carl works for the International Paper Company in Wooster.

Jerry Golden writes from Windsor, Conn., that his third daughter, Lynne, was born this past Christmas Day. Jerry and his wife Helen were married in 1955. His other daughters are Lisa and Nina. Jerry, who acquired his Ph.D. in chemistry at R.P.I. in 1957, is now in charge of analytical chemistry at the Research Labs of United Aircraft Corporation. Jerry's reports on other members of the class include the item that **Lou Bogar** is working for the Bettis Atomic Power Labs of Westinghouse in Pittsburgh. **Joe Kozol** is with General Electric in Philadelphia. **Jack Dietz** received his Ph.D. in chemistry at Tech in 1958, and is now at Los Alamos. **Bruce R. Brosler** is manufacturing furniture in Boston. . . . **Lois Brody** sent an announcement of the birth of Deirdre Margery, on December 26. She and **Howard** have two other daughters, Lisa and Victoria. . . . **Rosalie Myers** writes that **Dave** has moved from Raytheon to Avco Everett Research Lab, where he is a design engineer. The Myers have a daughter, Karen, and a son, Craig, and are living in Bedford, Mass. . . . **Phil James** sent along the word that he has left the New York-New Jersey area, and is now in the

research department of Technicolor Corporation. He and his wife Barbara are living in Tarzana, Calif. **Ellin Hayes** reports that **Dick** is riding high with the NASA types in Houston. His office is just down (or up) the hall from those of astronauts Glenn and Carpenter. Dick and Ellin boarded out daughters Priscilla and Victoria last Thanksgiving, and took a rest from the hectic space life on a trip to Mexico. And, to complete the stack of correspondence, **Sam Losh** sent his professional card. Sam is a senior research engineer with Lockheed Aircraft in Los Angeles.—**Edwin G. Eigel, Jr.**, Secretary, 4945a Sutherland Avenue, St. Louis 9, Mo.

'55

An interesting newsletter was received from **John and Debbie Lindenlaub**. They have three children now, two boys and a girl. John is an assistant professor of electrical engineering at Purdue in West Lafayette, Ind. . . . **Fred and Barbara Morgenthaler** report the birth of Ann Welke on September 5, 1962. Fred is an assistant professor at M.I.T. and lives in Winchester. . . . **Bob and Pat Dettmer** live in a town with the unlikely name of Chagrin Falls, Ohio, near Cleveland. He was promoted to associate of the firm of Booz, Allen and Hamilton last May. . . . **Carl Hess**, now a captain in the Army Chemical Corps, recently completed a special course of instruction at Fort McClellan, Ala. He and Barbara live in Anniston, Ala. . . . **Dennis Shapiro** recently returned from a five weeks' business trip that included England, Norway, Sweden, Israel, South Africa, Ghana, and France. He was involved with the installation of specialized ionospheric recording equipment at universities and observatories at these countries. . . . **Sandy Goldman** returned to Cambridge in November after a six months' scientific program that was based in Hawaii. He was in charge of a large operation for Aerospace Research, Inc., of Boston. . . . **Gil Davidson** was also in the same area with Barbara and little Amy Ruth. He was running a program for American Science and Engineering of Cambridge.

Your male editor was in the vicinity of Goddard Space Flight Center, Greenbelt, Md., recently and dropped in to see two classmates. **Dave Lipke** in the Communications Sciences Branch has recently moved there from Boston. He and Barbara, who are expecting in March, are living in Hyattsville, and looking for a house. . . . **Norm Ness** is one of the bright stars of the geomagnetic group, and has been publishing papers of substantial interest. . . . The address change slips we receive regularly are a source of some interesting moves, though we regret that we lack details in such cases. **Buzzy Seagle**, who holds the record for the most address changes reported since 1955 (about a dozen), left his last construction project in New York state for the Business School at Stanford University in the fall. . . . **Dan Brad-dock**, who trails Buzzy only slightly in

moves reported, is now back in Burlington, Mass., after many years in the Southwest. Behind these title-holders come too many people with seven or eight moves to even keep up with, much less report! Having moved back to the Southwest, to Albuquerque, from New York City is **Tod Hashour**. . . . Coming eastward somewhat, you can find **Doug Wixson** now in the Engineering Department of the University of Colorado in Denver. . . . And **Art Brownlow** is now in Rolla, Mo. (on the faculty of the Missouri School of Mines?). . . . Both **Steve Bengtson** and **Shelly Busansky** have migrated to Florida from the Boston area, Steve to Miami, Shelly to Clearwater. . . . **Dick Neergaard** has moved from Molines, Belgium to Wezembeek (this may be like moving from Brookline to Cambridge; no map around here has been much help). . . . And **Bill O'Neil** is still in Argentina and can be reached via the General Savis Plant of SOMISA in San Nicholas.

The January issue made your Wilmington correspondent wonder again how many people we misplace or misname when her firstborn Bruce Lanier Venarde, came out with a different middle name. You might recognize the correct one. . . . Also the **Greene** family, **Bob**, **Edie**, et al., really live in Charlottesville, Va., not Pa. We don't request misprints, but complaints are cheerfully received, since after all, they are mail, and we do prefer to dispense factual news!—Co-Secretaries: **Mrs. J. H. Venarde**, 2401 Brae Road, Arden, Wilmington 3, Del., **L. Dennis Shapiro**, 24 Concord Avenue, Cambridge, Mass.

'56

At lunch one day in February **Lloyd Beckett** told me about his work in the Industrial Liaison Office at Tech. Lloyd returned to Cambridge last July and now works with the research labs of many leading chemical, drug and oil companies. Since graduation Lloyd has been in the Air Force at the Cambridge Research Center, collected an MBA from Northeastern, and worked as a process engineer at Acushnet Process Company in New Bedford. He and Ruth have three children. From his travels Lloyd reports that **Bernie Benson** is a project engineer with Fluor Corporation, in Houston. **Bernie** and **Maryann** have a daughter, **Karen**, and a new son, **Brian**. **Jerry Colonna** is doing research at duPont on applying elastomer foams to construction. **Jerry** and **Barbara** have two daughters. . . . While entertaining **Dr. Mickey Reiss** at dinner one evening I discovered that he had given a presentation on January 14 on "Rendezvous Guidance and Mechanization" before an IRE professional group of Aerospace and Navigational Electronics specialists. The meeting was organized by **Gene Marcus**. . . . **Herb Amster** has become controller of Raytheon's semiconductor plant in Lewistown, Maine. . . . **Bill Grinker** is now with the sales force of the computer division of Minneapolis Honeywell in

Boston. . . . **Dave Mellen** and family are at the University of Michigan in Ann Arbor. . . . **Dick Quinn** is working at the Princeton, N.J., labs of RCA and is attending Brooklyn Polytech nights. **Dick** and **Lois** have a daughter, **Debbie**, a son, **Christopher**, and a recent arrival.

Asghar Ali became engaged to **Thalassa Hencken** of Chestnut Hill, Mass., in January. **Asghar** is managing director of F. F. Ltd., director of Precision Industries of Pakistan, and owner of A. Ali Commercial Corporation of Karachi, West Pakistan. . . . **Roger Borovoy** writes that he is now with the patent law firm of Lippincott, Ralls, and Hendricson in Palo Alto, Calif. . . . **Marc Forest** is in General Motors Overseas Operations in Detroit. . . . **Dr. Larry Jacowitz** has joined the Martin Company's space systems division in Baltimore. . . . **Dick Mateles** writes that he ran into **Emily Drew Cavanagh** and her husband at Charles Pfizer Company, in Groton, Conn., where they work as chemists. . . . **Joe Shami** is completing his S.M. at the School of Industrial Management. He is also associated with Minneapolis Honeywell. . . . So far the responses to my request for information have been arriving in time to meet publication deadline. Thank you.—**Bruce B. Bredehoff**, Secretary, 1094 Center Street, Newton Center 59, Mass.

'57

This will be the final installment of news on the classmates in the Boston area who gathered at a party in December. . . . **Dick Wade** and his wife, the former **Sharon Christie** (Wellesley, '58), reported that they now have two children, both boys. **Dick** is in his first year in the M.B.A. program at the Harvard Business School. He is maintaining his association with Minneapolis-Honeywell, for whom he has worked for five years. . . . **Bill Alcorn**, who came with his wife **Janet**, is now working on his Sc.D. in Course X at Tech. He is hoping to get out this September. **Bill** received his S.M. in 1960. During the 1961-1962 school year he was an assistant professor at M.I.T. and director of the Chemical Engineering Practice School at Esso's Bayway Refinery. **Janet**, I learned, is a professional singer (opera, oratorio, etc.). . . . **Jeff Wisnia** noted that after receiving an M.S.E.E. at the University of Pennsylvania, he returned to Boston to join Comstock and Wescott, Inc. He is now a senior electrical engineer with the firm. In 1961 **Jeff** married the former **Madelyn Bell** of Chestnut Hill. . . . **Bill Noz** is now working as a wind tunnel engineer at the M.I.T. Naval Supersonic Facility. He and **Ellie** (the former **Ellie Loomer**, Chamberlain, '57) have one daughter, aged one. . . . **John McAllister** and his wife **Jane** (**Jane Blount**, Wellesley, '58) drove down from New Hampshire. **John** is employed by Sanders Associates in Nashua as an electronics engineer. **Jane** is a fourth grade teacher in a local school. Last year they purchased a charming 160-year-old house out in the country.

Two letters arrived recently. **Tom Ahrens** brought me up to date on his activities: "In June, 1958, I left Caltech with an M.S. and a wife, **Earleen Mary**. I went to work for Pan American Petroleum, first in Salt Lake City and then in Casper, Wyo. After six months in the army in 1959 I returned to graduate school, this time to Rensselaer Polytechnic. I received a Ph.D. from Rensselaer last June. Presently I am engaged in research into shock-wave physics in solids as a member of the staff of the Poulter Laboratories of the Stanford Research Institute here in Menlo Park. We have one child, a son, now one year old." **Tom** also reported that he recently ran into **Mariano Gurfinkel** who is doing graduate work in political science at the University of California at Berkeley. . . . **Ralph Warburton** wrote from Wilmette, Ill.: "I was transferred last summer from New York to Chicago by Skidmore, Owings and Merrill to help plan the development of the Illinois Central Railroad air rights at Lake Michigan north of Randolph Street. It's a billion dollar project covering 60 acres! While in New York I served a couple of stints as a visiting juror at the Columbia University School of Architecture and contributed a section on industrial design to 'Man Made America: Chaos or Control,' edited by **Tunnard** and **Pushkarev**, and published this month by the Yale Press."—**Frederick L. Morefield**, Secretary, 17 Everett Street, Cambridge 38, Mass.

'59

Several nice letters have come in from '59ers during the last few weeks. My faith in our class is slowly being restored. **Dick Desper**, who is now working on his Ph.D. at the University of Massachusetts, has recently become engaged. **Dick** and **Beatrice Smith** of Norwell, Mass., are planning an August wedding. **Dick** also writes that **Al Girotti** is attending the University of Mass. . . . **Don Spiller** is in the process of finishing up at Harvard Business School this June. A son, **Woody**, was born to the **Spillers** last January. **Don** writes that **Scott Latimer** is now married. Let's hear all the details, **Scott**. And our best wishes to **Dick**, **Don** and **Scott**. . . . **Norm Miller** is embarked upon an interesting career. As chief humor writer for Rust Craft Greeting Cards, **Norm** did most of the writing for Rust Craft's successful "Adult Coloring Books." . . . **Dick Hall** has completed his Ph.D. in chemistry at the University of California. **Dick** is married to the former **Yolanda Blozan**, and is working for Aerospace Corporation in California. . . . **Bradford Bates** writes of a son, **David Richardson**, now one year old. **Brad** informs us that **George** and **Angela Foyt** now have a daughter, **Claire Anne**, and that **Stephen** and **Elaine Denker** have a daughter, **Susan Joyce**. Congratulations to all.

Bruce Newell is now married, but no details are available. . . . **Richard Huguenin** is affiliated with the Astronomy Department at Harvard and recently contributed to a seminar given at Tech.

... **Joseph Keller** and Cynthia Broadhead were recently married in Connecticut. Joe is still at M.I.T. and will become a teaching fellow in September. ... **James Hodder** is now a section manager in Raytheon's Missiles and Space Division. ... I hope everyone has answered **Larry Bishoff's** recent letter and request for contributions. Let's keep up the letter writing, too.—**Robert A. Muh**, Secretary, M-424 Arlington Towers, Arlington 9, Va.

'60

I have received letters recently from two classmates which I will pass on. **Sidney Ossakow** reports that he received his master's at U.C.L.A. last year and is now working on the doctorate. Sid is also teaching at U.C.L.A. ... **Howard Braun** wrote from the freezing northlands (Minneapolis) and reports a son born in August of 1962. ... Three bits of news came to me courtesy the Armed Forces news centers. **Michael Saulich** reported to the Boston Naval Shipyard in January as ship superintendent in the production department. Since leaving M.I.T., he has earned his master's degree at Stanford. ... **William Banks** has been working with the Air Force Weather Service in their attempts to establish a meteorological data-gathering network. He was stationed at last report at Elgin AFB, Fla. ... **Carl Thomas** has been working at the Army's Mobility Command Engineering Research and Development Labs, Fort Belvoir, Va. He has been assigned as a physicist in the Warfare Vision Branch. Carl was at the University of Pennsylvania in 1960-61 and is working toward his doctorate at Catholic University, Washington, D.C. ... As you can tell, the amount of news is rather slim. Certainly the success of this column depends on your contributions to it. Please sit down and drop a note—let us know what you are up to.—**John B. Stevenson**, Secretary, 106 Ellery St., Cambridge 38, Mass.

'61

Lots of catching-up to do. People seem to have come alive suddenly and I have all sorts of communications on hand. A Christmas card from **Bob Nagro** arrived via the Alumni Office; the stamps on the envelope were Italian, but were not postmarked, just to add a note of mystery. Bob says: "I'm in Milan at the moment, but I've been traveling almost continuously since August. The job, the travel, and Europe, are all just great. I'm putting in long hours, but enjoying every minute of it all." Apparently we won't see him back at home here for some time to come. ... Also heard from **Art Katz**, who writes: "After graduation, I went to Yale to do some graduate work in business on a fellowship and assistantship. I had planned to finish up this year but the Army intervened. During the summer I worked for IBM doing management con-

trol work on new products and was given the opportunity to see what will be offered in the future both in products and management. I married Lois Fradkin (Wellesley, '62) in August. Right now, Lois is in New York going to Medical School, and I'm on my way to Georgia. I've been in the Army since September. First I was in Virginia taking construction courses; in two days I start the Airborne Course at Fort Benning—this will be something new. Right after that I will be going to the 78th Engineer Battalion, Karlsruhe, Germany (APO 164, N.Y.) The duration of my service will be spent there."

On my way back before Christmas, I ran into **Claude Phipps**, and was introduced to his bride; he married Lynn Malarney December 1 in Boston. ... Congratulations are in order for **Kenneth Macoul**, possessor of a \$1500-scholarship at Tufts Medical School, where he has been since graduation. Sorry that this item is so late in appearing.

Paul Schweitzer rates the title of Honorary Assistant Class Secretary of the Month, having gathered together and passed on to me a lot of news about the Baker House fourth floor clan. Paul himself is still at M.I.T., going for his Ph.D. ... **Al Traver** received his M.S. at Iowa State, and is remaining for his doctorate. ... **Jim Manganaro** received his M.S. at M.I.T. last June, and is going on at R.P.I. ... **Stan Kulpa** is studying for his doctorate in physics at Northeastern. ... It's a pleasure to pass on word of two of the engagements in the group: those of **Joel Serkes** to Janet Libros, and **Dave Tapparo** to Mary Ann McCandless. Joel is presently working for Avco in Wilmington, Mass., and his plans include an August wedding. Dave recently finished up his M.S. at the Institute, and is now with G.E. in Lynn, Mass. He and Mary Ann plan to be married in July. Congratulations to Joel and Dave, and best of luck to both couples. ... **Willy Nieckarz**, also of the aforementioned clan, wrote to me personally. He's now studying for his Ph.D. in nuclear chemistry at Carnegie Tech; he's engaged to Aline Fournier, who is going for her Ph.D. in organic chemistry at Carnegie. She is from Lowell, Mass., and is a graduate of Lowell Tech.

Many thanks to all of you who wrote, and particularly to Paul for his work. I can even contribute something about myself, this time. Your secretary has been engaged for some time now to Diethild Müller of Vienna, Austria. We met in the summer of 1961 when I was in that city; she is now doing graduate work at Wellesley. We plan to marry in June. The outlook is for at least one more year of work here at M.I.T. in nuclear engineering—**Joseph Harrington**, 3d, Secretary, M.I.T. Graduate House 212A, 305 Memorial Drive, Cambridge 39, Mass.

'62

I heard from **Jeff Steinfeld**, V, who is at Harvard in the Chemistry Department along with **Phil Miller**, V. He has

also run across **Heschel Raskas**, VII, who is at Harvard in biochemistry and **Hal Shukovsky**, III, in the Applied Science Division. Heschel and his wife, Adinah, are living in Brookline and Hal and his wife Yvonne are in Brighton. Also at Harvard are **Alan Fuchs**, XXI, in philosophy and **Jon Glass**, VII, in the medical school. ... **John Larson**, VI, who is at Stanford in electrical engineering, was married to Nancy L. Gardell in New York last December. Mrs. Larson is a graduate of the Bouve Boston School of Physical Therapy and Tufts University. John is working for Varian Associates and attending Stanford on their co-operative program. ... **Paul Olmstead**, VI, is similarly attending Stanford and working for Lockheed in Sunnyvale, Calif. ... **Don Smith**, VI, is working for the MITRE Corporation and was married last September. ... **Ken Labaugh**, VI, is working for Sanders Associates in Nashua, N.H. ... **Ted Labuza**, XX, is at M.I.T. and was engaged last Christmas. ... **Eric Lange**, XV, is a manager in the Design Service Department of Ford Motor Company. ... **Joe LaPrade**, V, is studying at the University of Vermont. ... **Adolfo Lau**, I, is at M.I.T. with a research assistantship. ... **Fred Lawrence**, I, is also at M.I.T. ... **Mike Lawton**, XVI, is working for Boeing in Seattle, Wash. ... **Leonard Lindenmeyer**, VI, is working for Bell Helicopter in Fort Worth, Texas. ... **Dennis Luebke**, XV, is working as a junior engineer for IBM. ... **Jon Luke**, VI, is at M.I.T. with an NSF fellowship. ... **Pete Lupescu**, II, is an engineer at the Pontiac Motor Division of General Motors.

Randall Kunz, XV, is at M.I.T. ... **Steve Tafeen**, XVIII, is at Stanford. ... **Shigeyuki Takeyama**, VII, is working as a research biochemist for the Tanabe Seiyaku Company, Ltd. in Japan. ... **John Talbot**, V, is working in the Economic Planning Department at Beloit Corporation. ... **Herb Taylor**, XV, is working as a Systems Engineer for IBM. ... **Ken Taylor**, X, XV, is studying at the University of Geneva Technologica Instituta. ... **Paul Teplitz**, VI, is at Carnegie Tech. ... **Emanuel Terezakis**, V, is at Brown University with a teaching assistantship. ... **Bob Thews**, VIII, is at M.I.T. ... **Irving Thomae**, VIII, is at M.I.T. on an NSF fellowship and a Danforth Fellowship. ... **Jim Thompson**, VI, is working for the Motorola Semiconductor Products Division in Phoenix, Ariz. He is also attending Arizona State University for his M.S. in solid state engineering. ... **Henk Tinkelenberg**, XVIII, is at M.I.T. and was engaged to Candia Manwaring of Needham, Mass. ... **Jerry Tlapa**, I, is at M.I.T. along with **Dirk Berghager**, I, **Imad Taher**, I, and **Sam Laboonme**, I. ... **Dick Todgham**, XV, is working for the Aluminum Company of Canada, Ltd. ... We have an all-M.I.T. intramural basketball team here at Stanford consisting of **Will Taylor**, XVI, **Art Samberg**, XVI, **Howie Plotkin**, XVIII, **Tom Traylor**, I, '61, and myself.—**Gerald L. Katell**, Secretary, 3771 Redwood Circle, Palo Alto, Calif.

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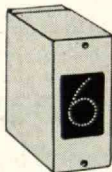
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